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ABSTRACT

Important because of implications for program planning, student costs, and state aid payments, this study projects New York State's public and private student enrollment from 1976 to 1990. The study reviews research procedures, statistical methods, and sources of essential information for predicting enrollment. Literature concerning enrollment projection is reviewed. The consensus of this literature is that the modified cohort-survival technique is the least expensive and time-consuming satisfactory method of enrollment forecasting. The study analyzes enrollment data and projects live births and birthrates. It projects public school enrollments by region and both public and private K-12 enrollment, senior high school graduates, and pupils in special education classes. Some nationwide data analysis is also included. The data indicate that in New York State, public school K-12 enrollment will decline until 1988 when it will begin to rise again. The number of public school graduates will rise until 1981 when it will begin to decline. Overall private school enrollment and number of private school graduates will decline until at least 1990. Both public and private special education enrollment will rise at least until 1990. Public school enrollments are projected to decrease in every region until 1990. A lengthy bibliography is appended. (Author/JM)

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RESEARCH STUDY 10

THE PROJECTIONS OF PUPIL POPULATION IN NEW YORK STATE

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EA 010 919

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	i
LIST OF TABLES	ii
LIST OF FIGURES	iv
Chapter	
1. GOALS AND OBJECTIVES	1
2. RESEARCH PROCEDURES AND STATISTICAL METHODS USED IN PREDICTING PUPIL ENROLLMENTS	3
Variables Used in Predicting Pupil Enrollments	3
Some Essential Records for Predicting Pupil Enrollments	4
School District Census	5
Record of Annual Births	5
Net Residential Dwelling Status	6
School District Maps	6
Nonpublic Enrollment Studies	7
Records of Greater Metropolitan Areas	7
Intergovernmental Corporation	7
Some Methods for Predicting School Enrollments	8
Straight Line Method to Predict Pupil Enrollment	9
Multiple Correlation Variables Method	9
Modified Grade Retention Ratio Method	10
Statistical Methodology Utilized in Pupil Enrollment Projections	11
3. REVIEW OF THE LITERATURE	14
Summary	19

TABLE OF CONTENTS CONTINUED

4. ANALYSIS OF PUPIL ENROLLMENT DATA 20

Live Births and Birth Rates 20

Actual Live Births 20

Actual Birth Rates 24

Projected Live Births and Birth Rates 25

Pupil Enrollments in Public Elementary and Secondary Schools in New York State 26

Pupil Enrollments in United States 26

Pupil Enrollments in New York State 31

Survival Ratios Public School Enrollments 33

Public School Graduates 43

Nonpublic School Enrollments in New York State 44

Survival Ratios Nonpublic Schools 51

Nonpublic School Graduates 59

Special Education Pupil Enrollments 59

Trends in Elementary Special Education Enrollments 62

Trends in Secondary Special Education Enrollments 66

Trends in Public School Enrollments by Region in New York State 69

Trends in Total Public School Enrollment in New York State 73

5. SUGGESTIONS REGARDING FUTURE METHODOLOGY FOR PROJECTING PUPIL ENROLLMENTS IN NEW YORK STATE 76

Review of Methodology 76

BIBLIOGRAPHY 79

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LIST OF TABLES

Table		Page
10.1	Trend Data on Live Births and Birth Rates, for United States and New York State	21
10.2	Trend Data on Public Pupil Enrollments Grades K-12 of Regular Day Schools, 1965 to 1990	27
10.3	Trend Data on Ratios of Kindergarten and Grade 1 Public Enrollments to Live Births, New York State	28
10.4	Trend Data on Ratios Grades 2 to 6 Public Pupil Enrollments to Grades 1 to 5 Public Pupil Enrollments of the Previous Year, New York State	29
10.5	Trend Data on Ratios Grades 7 to 12 Public Pupil Enrollments to Grades 6 to 11 Public Pupil Enrollments of Previous Year, New York State	30
10.6	Trend Data on Ratios of Kindergarten and Grade 1 Nonpublic Enrollments to Live Births, New York State	45
10.7	Trend Data on Ratios Grade 2 to 6 Nonpublic Pupil Enrollments to Grade 1 to 5 Nonpublic Pupil Enrollments of the Previous Year, New York State	46
10.8	Trend Data on Ratios Grade 7 to 12 Nonpublic Pupil Enrollments to Grades 6 to 11 Nonpublic Pupil Enrollments of the Previous Year, New York State	47
10.9	Trend Data on Senior High School Graduates Both Public and Private, New York State	48
10.10	Trend Data on Special Education Public Pupil Enrollments, New York State	60
10.11	Trend Data Nonpublic Special Education Pupil Enrollments, New York State	61
10.12	Trend Data on Public School Enrollments by Region in New York State	70
10.13	School Enrollment in New York State for Public Elementary and Secondary Regular Day Schools	71

LIST OF TABLES CONTINUED

Table		Page
10.14	BOCES* Enrollment Trends in New York State--1970-90	72

LIST OF FIGURES

Figures		Page
10.1	Trend Data on Live Births in United States and in New York State from 1960 to 1990	22
10.2	Trend Data on Live Birth Rates in the United States and in New York State from 1960 to 1990	23
10.3	Actual Public Pupil Enrollments for New York State from 1965 to 1975 and Public Pupil Enrollments Projection for New York State from 1976 to 1990 by Grades Kindergarten to 6, Grades 7-12, and Grades K-12	32
10.4	Actual and Projected Survival Ratios of Kindergarten Enrollment to Live Births and First Grade Enrollment to Kindergarten in New York State Public Elementary and Secondary Schools, 1965 to 1990	34
10.5	Actual and Projected Survival Ratios of Grade 2 to Grade 1 Previous Year's Enrollments and Grade 3 to Grade 2 Previous Year's Enrollments in New York State Public Elementary and Secondary Schools, 1965 to 1990	35
10.6	Actual and Projected Survival Ratios of Grade 4 to Grade 3 Previous Year's Enrollments and Grade 5 to Grade 4 Previous Year's Enrollments in New York State Public Elementary and Secondary Schools, 1965 to 1990	36
10.7	Actual and Projected Survival Ratios of Grade 6 to Grade 5 Previous Year's Enrollments and Grade 7 to Grade 6 Previous Year's Enrollments in New York State Public Elementary and Secondary Schools, 1965 to 1990	37
10.8	Actual and Projected Survival Ratios of Grade 8 to Grade 7 Previous Year's Enrollments and Grade 9 to Grade 8 Previous Year's Enrollments in New York State Public Secondary Schools, 1965 to 1990	38

LIST OF FIGURES CONTINUED

Figures		Page
10.9	Actual and Projected Survival Ratios of Grade 10 to Grade 9 Previous Year's Enrollments and Grade 11 to Grade 10 Previous Year's Enrollments in New York State Public Secondary Schools, 1965 to 1990	39
10.10	Actual and Projected Survival Ratios of Grade 12 to Grade 11 Previous Year's Enrollments and Graduates to Grade 12 Previous Year's Enrollments in New York State Public Secondary Schools, 1965 to 1990	40
10.11	Actual Nonpublic Pupil Enrollments for New York State from 1966 to 1975 and Nonpublic Pupil Enrollment Projections for New York State from 1976 to 1990, by Grades Kindergarten to 6, Grades 7-12, and Grades K-12	49
10.12	Actual and Projected Survival Ratios of Kindergarten Enrollment to Live Births and First Grade Enrollment to Kindergarten in New York State Nonpublic Elementary and Secondary Schools, 1965 to 1990	50
10.13	Actual and Projected Survival Ratios of Grade 2 to Grade 1 Previous Year's Enrollments and Grade 3 to Grade 2 Previous Year's Enrollments in New York State Nonpublic Elementary Schools, 1965 to 1990	52
10.14	Actual and Projected Survival Ratios of Grade 4 to Grade 3 Previous Year's Enrollments and Grade 5 to Grade 4 Previous Year's Enrollments in New York State Nonpublic Elementary and Secondary Schools, 1965 to 1990	53
10.15	Actual and Projected Survival Ratios of Grade 6 to Grade 5 Previous Year's Enrollments and Grade 7 to Grade 6 Previous Year's Enrollments in New York State Nonpublic Elementary and Secondary Schools, 1965 to 1990	54

LIST OF FIGURES CONTINUED

Figures		Page
10.16	Actual and Projected Survival Ratios of Grade 8 to Grade 7 Previous Year's Enrollments and Grade 9 to Grade 8 Previous Year's Enrollments in New York State Nonpublic Elementary and Secondary Schools, 1965 to 1990	55
10.17	Actual and Projected Survival Ratios of Grade 10 to Grade 9 Previous Year's Enrollments and Grade 11 to Grade 10 Previous Year's Enrollments in New York State Nonpublic Elementary and Secondary Schools, 1965 to 1990	56
10.18	Actual and Projected Survival Ratios of Grade 12 to Grade 11 Previous Year's Enrollments and Graduates to Grade 12 Previous Year's Enrollments in New York State Nonpublic Elementary and Secondary Schools, 1965 to 1990	57
10.19	Actual Public and Nonpublic Elementary Special Education Enrollment for New York State from 1966 to 1975 and Projections for New York State from 1976 to 1990	63
10.20	Actual and Projected Ratios of Public Elementary Special Education Pupils to Total Public Elementary Pupils Enrolled, and Nonpublic Elementary Special Education Pupils to Total Nonpublic Elementary Enrolled, 1965 to 1990	64
10.21	Actual Special Education Public and Nonpublic Pupil Enrollment for New York State from 1965 to 1975 and Public and Nonpublic Special Education Pupil Enrollment Projections for New York State from 1976 to 1990	67
10.22	Actual and Projected Ratios of Public Secondary Special Education Pupils to Total Public Secondary Pupils Enrolled, and Nonpublic Secondary Special Education Pupils to Total Nonpublic Secondary Enrolled, 1965 to 1990	68

CHAPTER 1

GOALS AND OBJECTIVES

The principal goal of Research Study 10 is to project the pupil population for New York State.

Specifically, pupil projections were made over the fourteen year period from 1976-77 to 1990-91. These pupil projections were for the following cohort groupings in New York State:

1. Grade-by-grade enrollments in the public schools of New York State from Kindergarten to Grade 12.
2. Grade-by-grade enrollments in the nonpublic schools of New York State from Kindergarten to Grade 12.
3. The number of senior high school graduates in the public schools of New York State.
4. The number of senior high school graduates in the nonpublic schools of New York State.
5. The number of pupils in special education classes in the public schools of New York State.
6. The number of pupils in special education classes in the nonpublic schools of New York State.
7. The number of pupils in regional areas in the public schools of New York State.

All school enrollment projections were for pupils in grades K to 12 and in the regular school day instructional program. Projections for pupils enrolled in prekindergarten classes

was not undertaken because of the inadequacy of trend data.

While predicting future pupil enrollments is not the most important task of local and state school administrators, it may well be one of the most important determinants in affecting the future direction and quality of the educational program. This is because pupil enrollments affect State Aid payments and expenditures for the instructional program. Programs may improve and per pupil costs may be reduced when more pupils are available to take low enrollment/high cost classes such as calculus, advanced physics, Russian, or vocational technical courses.

CHAPTER 2

RESEARCH PROCEDURES AND STATISTICAL METHODS USED IN PREDICTING PUPIL ENROLLMENTS

It is important to note that Research Study 10 is not an investigation to determine the best variables and the best statistical procedures to utilize in predicting pupil enrollments. However, the authors deemed it most appropriate to discuss some of the variables and statistical procedures used to predict pupil enrollments.

VARIABLES USED IN PREDICTING PUPIL ENROLLMENTS

Clearly, there are dozens of variables that may influence the number of pupils who enroll in the public or private schools of a given school district. Numerous research studies have shown that the key to accurate long-term future pupil projections (ten or fifteen years in the future) is the accuracy of the entering first grade cohort population. Some of the variables known to affect first grade enrollments are:

1. Number of births
2. Net Migration
   a. Trends in industry
   b. Trends in neighborhoods
   c. Saturation of school district
3. Mortality rates
4. Noneducable students
5. Nonpublic enrollment policies

6. Attraction to other school districts (tuition costs)
7. School district promotional policies
   a. Retention
   b. Accelerations
8. School Age Admission policies
9. Transportation policies
10. Acceptance of nonresidents
11. Change of School Boundaries

Some of these variables are only important in that they affect school district or regional areas pupil enrollments. However, most of these variables also affect State school enrollments.

SOME ESSENTIAL RECORDS FOR PREDICTING PUPIL ENROLLMENTS

Neither the State of New York nor its local school districts can hope to maintain on a continuing basis all the essential records that have proved useful in projecting pupil enrollments. Some of the records that have proved useful in making more accurate pupil enrollment projections are:

1. School District Census
2. Record of Annual Births
3. Net Residential Dwelling Status
4. School District Maps
5. Nonpublic Enrollment Studies
6. Records of Greater Metropolitan Areas

7. Inter-Governmental Records

A brief discussion of each essential record listed above follows:

School District Census

Ideally, school districts should take a census of persons by age from birth to about 18 or 20 years of age. Such surveys should be supported by State or school district funds and not done on a voluntary basis by conscientious community persons. This is because neighbors are reluctant to participate in surveys when the census taker is a neighbor. School district census studies yield valuable pupil projection information, particularly as regards to preschool age groups and non-public enrollments. Unfortunately, census studies are very costly.

Record of Annual Births

This is a most important parameter since it is used to predict future first grade enrollments five or six years hence. The Health Department, Bureau of Vital Statistics, or local hospitals are useful agencies to obtain this statistic. The larger the area, the more accurate the birth statistics. For example, the total number of births in the State is apt to be a more accurate statistic than the number within a given county and in particular within a given school district. Yet it is important to realize that some births go unreported even at the State level.

Net Residential
Dwelling Status

Data on the number of dwelling units, the location of new dwelling units and their number, the occupancy rates of dwelling units, the pupil yield of various types of dwelling units, the number of multiple dwelling units and their location, and the number and location of dwelling units demolished are useful for projecting pupil enrollments. The collection of such data are generally beyond the resources of small local school districts. However, the collection of such data could be made mandatory on a county, regional, or State level and incorporate the school district as a basis for disaggregation of the data.

School District
Maps

Maps of school district boundaries, major topography, and major traffic arteries should be available to individuals responsible for projecting pupil populations. Sometimes, aerial photographs are available from local planning boards, U.S. Department of Interior, National Guard or State Highway Departments. School attendance area maps are invaluable aids for projecting pupil enrollments on a school district basis. In this connection, pupil spot maps are useful to principals and local superintendents.

Zoning maps are useful indicators of possible future developments and the particular type of development therein authorized.

Nonpublic Enrollment Studies

The past trends and plans for new construction should be checked with clergy and headmasters. Such plans could affect the ratio of public versus nonpublic enrollments. In local districts, such plans could affect public enrollments dramatically. The decline of teaching brothers and sisters, the corresponding increases in lay teachers, cost of living, educational improvements, and taxes are among the variables causing a serious decline in nonpublic school enrollments in some areas of the country.

Records of Greater Metropolitan Areas

United States Census Reports contain excellent data indicating growth trends in the country, State, and national areas which can be used for comparative purposes with district and State data. Past and present total population forecasts for given areas are sometimes prepared by utility companies or private corporations.

Intergovernmental Corporation

City, County, and State governmental units are agencies that prepare many documents containing data useful for school enrollment projections. These governmental agencies generally cooperate with one another in the exchange of useful information. Utility companies have valuable data which can help school planners determine pupil enrollment trends. Water usages and sanitation capacities are powerful factors which should be

considered in making pupil population forecasts. Telephone companies have excellent estimates of future population in given areas.

Governmental employees charged with the approval of all new buildings permits, including schools, represent an extremely valuable source of information for predicting future pupil enrollments.

Birth data can be obtained most efficiently when school planners maintain good working relations with hospitals, Bureau of Vital Statistics, or churches which record all new members.

These, then, represent only a few of the essential records which contain data useful for predicting pupil enrollments.

SOME METHODS FOR PREDICTING SCHOOL ENROLLMENTS

There are numerous methods and procedures for predicting pupil enrollments not all of equal accuracy and efficiency. The methods discussed here are not intended to be detailed and inclusive. The point is merely to draw reference to a certain procedure. However, the pupil projection procedure that was used in this study is described in detail in its appropriate section. A person interested in a particular procedure should consult the bibliography attached to this Research Study.

Some of the procedures for predicting pupil enrollments are:

1. Straight Line Method

2. Multiple Correlation Variables Method

3. Modified Grade Retention Ratio Method

Straight Line Method to Predict Pupil Enrollment

This is a simple straight forward approach. Enrollment data are plotted on a graph. Then a straight line is drawn which best fits the plotted area. The pupil enrollments may be deduced for given years from the extension of the straight line. Clearly, the straight line method is only very accurate when enrollments are increasing or decreasing at a uniform, steady rate. School districts or states which are rapidly increasing in pupils would not have accurate estimates using the straight line method. Thus, in areas rapidly gaining in pupils, the straight line methods yield results which are low, while in areas rapidly losing pupils the estimates tend to be high.

Multiple Correlation Variables Method

Some agencies utilize a multiple correlation regression equation to predict pupil enrollments. While this method enjoys a high prestige because it is statistically complex, it does not yield more accurate results than simpler statistical procedures. Some of the variables that have been utilized in multiple regression formulas were number of new home permits, vacant land acreage, net migration rates, actual pupil enrollments from previous years, grade retention ratios, etc. Because of greater and faster data processing capabilities of today's computers a large number of factors can be investigated

for their relationship in predicting pupil enrollments. Present day large scale computers enable school planners to examine many di-ferent pupil predictor models. In other words, if such and such takes place and these factors remain constant, this is what pupil enrollments will look like in five years, ten years, or twenty years in the future. Of course, the drawback to including large numbers of predictor variables in the multiple order regression correlation is the great expense in collecting and editing the input data. Moreover, even with data processing by computer, enrollment predictions have not proved to be more accorate using multiple regression analyses than a modified grade retention ratio technique. The latter method is also less costly.

Modified Grade Retention Ratio Method

A rather accurate, inexpensive method of forecasting pupil enrollments is the Modified Grade Retention Ratio Method. This is because the predictor model depends only on grade enrollment statistics (usually already collected by State Departments of Education and thereby entail no additional data collection expenditures) and on birth data (usually collected by a Bureau of Vital Statistics).

Briefly, this method involves plotting these ratios as trends, estimating grade retention ratios for the future, applying both actual and estimated grade retention ratios to pupils enrolled, and thereby obtaining projected pupil enrollments. This method tends to yield rather accurate results for

projections no more than six years in the future. Forecasts made for more than six years in the future move further and further away from the actual data available until finally all projections are based on estimated rather than actual grade retention ratios. The effect could probably be less accurate pupil projections for the years further removed from actual ratios.

STATISTICAL METHODOLOGY UTILIZED IN PUPIL ENROLLMENT PROJECTIONS

As indicated earlier under Goals and Objectives of Research Study 10, a number of pupil enrollment projections would be made. This Section describes in detail the statistical methodology utilized to make these pupils enrollment projections. The procedure used to predict enrollments herein has been referred to as the Modified Grade Retention Ratio Method or the Modified Pupil Cohort Survival Model. While this procedure lacks the complexity of other statistical models predicting population, insofar as pupil enrollment projections are concerned numerous research studies have been shown that the Modified Pupil Cohort Survival Model yields as accurate and in many instances more accurate estimates than most of the complex statistical models[1].

Two basic sets of data are needed to implement the Modified Pupil Cohort Survival Model: (1) live births; and

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[1]Clara E. Grether, Factors in the Growth Variations in Public Elementary School Membership in Urban Census Tracts. Doctoral Dissertation. Johns Hopkins University, 1967.

(2) actual pupil enrollments. Live births are needed in order to compute estimates of Kindergarten and Grade 1 Pupil Enrollments. Clearly, kindergarten and first grade enrollments are functions of live births. So are the other grade enrollments. However, in general, a higher grade enrolled can best be estimated from the next lower grade enrollment (grade retention or survival ratio). The more live births in a local school district, region, or state, the greater the probability that the kindergarten and first grade enrollments will be higher. For large urban districts the relationships between live births and Kindergarten and between live births and Grade 1 enrollments are high and positive.

As indicated above, the second basic data requirement to implement the Modified Pupil Cohort Survival Model is actual pupil enrollments by grade. These data are necessary to compute the actual survival ratios. The ratios indicate the proportion of pupils who actually "survived", from one grade to the next the following year.

Experience has shown that survival ratios have values close to 1.000. In some instances, particularly at Grade 9, survival rates may be greater than 1.0000 usually due in part to nonpublic secondary programs, whose students choose to attend public schools when leaving eighth grade. Nonpublic grade level organization is traditionally K-8, 9-12, with students having to reapply for admission to high school. Some choose not to do so. Grade by grade survival rates less than 1.000 usually are functions of deaths, dropouts, retention policies, transfers to pri-

vate schools, and net outmigration from the area. Survival ratios greater than 1.000 usually are functions of transfers from nonpublic schools, imigration to the area, and positive promotional policies. Although six year projections tend to reach the limits of high degrees of accuracy, almost a decade and a half predictions were made in this study because of desire and need to analyze and assess the long term implications of State Aid Formulas, whether they be in actual use or proposed.

CHAPTER 3

REVIEW OF THE LITERATURE

Although a wide variety of methods and procedures exist for predicting pupil enrollment, not all are of equal accuracy and efficiency. The validation of prediction methods is usually achieved by comparing past projections to actual events, and by comparing the projections of several methodologies to the same population. A 1952 study indicated that in twenty-one of fifty-three cases of short-range projections, those projections had errors between ten and sixty percent. In addition, the smaller the prediction area and the further into the future the prediction is extended, the greater the error.[1] Larsen and Strevell confirmed these findings by contrasting thirty-one projections with actual later figures. They reported median errors of 6.2 percent in one to five years' forecasts, 7.0 for six to ten years' projections, and 31.9 percent for eleven to eighteen years.[2] The methods discussed here are not intended to be detailed and inclusive, but rather are designed to indicate various possibilities and the reasons for the particular methodology selected.

The most prominent methodologies cited in the literature are the census class method, the survivorship technique, the cohort-survival method, and the multiple correlation regres-

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1 Classrooms for How Many? Enrollment Handbook. (Albany, N.Y., Commission on School Buildings of the State of New York, December, 1952), p. 8.

2 Knute G. Larson and Wallace E. Strevell, "How Reliable Are Enrollment Forecasts?", School Executive, 71: 65-68, February, 1952.

sion analysis method. Each will be dealt with in turn.

The census class method requires accurate census figures at the given projection level. The method consists of accumulating age pyramids by whatever groups are appropriate, e.g., sex; school age; child bearing. Survival ratios from one year to the next are computed and altered according to present trends and extended into the future. To determine school enrollment, a ratio of each projected age group for a given grade is assumed to survive, and desire to attend public school. Past historical data are used to determine this ratio. Of course, projections of a longrange nature require estimates of future births. Although this can be accomplished by applying fertility rates to the number of females aged 18 to 44, the impact of new birth control devices or the decision of married couples to have larger or smaller families are uncertainties. Such a system, therefore, weighs heavily upon the good judgement of the forecaster in utilizing age to grade attendance ratios and future birth rates. Such a procedure is also quite unreliable if the population is changing at an unstable rate.[1]

The survivorship method of enrollment forecasting might be more accurately termed the birth index method. This technique forms a ratio between past enrollment and past births to make an estimate of future grade size. Thus, the number of students in a given grade were the product of a particular birth year. Past

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[1] Paul A. Hedlund. Estimating Future Public School Enrollments. Albany, N.Y.: The University of the State of New York, Division of Research, 1949.

experience leads to anticipation of survival ratios, and the effects of in and out migration. The advantage of such a methodology compared to the census class method are obvious. Accurate census data for all age groups need not be collected, and birth data for a given year for any projection level are normally quite available, as are estimates of future birth rates. In addition, less judgement is required by the forecaster to obtain enrollment projection ratios. However, the absence of fertility rates and the number of women aged 18 to 44 means that the accuracy of the projections is dependent upon the accuracy of the birth rate projections, which the forecaster must place something akin to blind faith in.[1]

The most popular and most frequently utilized method of enrollment forecasting is the cohort-survival method. Three pieces of information are required for this projection technique: the present grade enrollment; the resident live births; a forecast of future resident live births. The most frequently followed procedure is to form a ratio of grade one enrollment to births six years previous. The next step is to find a ratio of student survival from one year to the next. By extension of these ratios, or by averaging past ratios, a single ratio is obtained by which future grade enrollments are projected. Unfortunately, without census data, there is no clear cut measure of migration, and thus

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[1] R. W. Edmiston, "How to Predict Your District's Enrollment," School Executive, 73-59, May, 1954. See Also C. W. Odell, "Estimating Future School Enrollments," American School Board Journal, 122: 32,97, January, 1951.

no adequate way of ascertaining future directions of the ratio.[1]

Many adaptions and modifications of these methods are utilized. In small districts, house to house canvasses are common in establishing accurate census data and projections of resident live births. Other forecasters, notably Engelhardt, made comparisons of larger populations or regions and assumed similar trends for the level at which projections were being made.[2]

At least two attempts have been made at utilizing the statistical technique of multiple linear regression in enrollment forecasting. The first was a dissertation in 1959 at Pennsylvania State University which demonstrated the applicability of the procedure to enrollment forecasting.[3] However, the work failed to use past enrollment data as a test of efficiency of the method. A subsequent study[4] at John Hopkins attempted to utilize a regression equation useful in predicting public elementary school membership. Some thirty-five variables thought to influence school enrollment were explored, and tested against actual school

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[1] Paul A. Hedland, "How to Estimate Future Public School Enrollments," American School Board Journal, 120: 27-28, 94, February, 1950. See Also Harold J. Bowers, "Projecting School Enrollments for One State," Journal of Teacher Education, 5: 64-66, March, 1954.

[2] N. L. Engelhardt, Jr., "The Impact of Population Trends on Long Range Planning," American School and University (1953 Edition), New York: Buttenheim Publishing Corp., 1953 pp. 149-52.

[3] Kenneth A. Simon, Enrollment Forecasting in the Public Elementary and Secondary Schools of Pennsylvania. Doctoral Dissertation, The Pennsylvania State University, University Park, 1959. Ann Arbor, University Microfilms, Inc., 1959 - MIC. 59-6798.

[4] Clara E. Grether, Factors in the Growth Variations in Public Elementary School Membership in Urban Census Tracts. Doctoral Dissertation. John Hopkins University, 1967.

enrollments for the years 1952 to 1956. Among the variables considered were: measures of immediate past change in enrollment; measures of past change in the general population; measures of previous general population size; measures of previous general population density; measures of corresponding birth cohorts; measures of mobility; measures of economic or occupational status; measures of cultural status; measures of community change with availability of housing; measures of status of women.

Of great interest are the findings of that study. Despite the introduction of the thirty-seven variables into the equation, the variables that contributed most to the variance in the dependent variable were previous enrollment change and size. This simple finding meant that the addition of other variables were of little value in enhancing the accuracy of enrollment predictions. In short, the often used cohort-survival method was as useful as the most sophisticated statistical procedures which could be applied to the problem -- and at a far lower cost.[1]

It is important to emphasize that most writers make little or no distinction in the technique for forecasting local school district enrollments or for making state and national projections. Generally, such distinctions must be made by the reader. In addition, to some writers, the techniques by which projections are made are regarded as paramount to a trade secret. This is particularly true if certain modifications or judgmental

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[1] Clara E. Grether, Factors in the Growth Variations in Public Elementary School Membership in Urban Census Tracts, Doctoral Dissertation. John Hopkins University, 1967.

decisions are a part of the forecast. Gottlieb even asserts that no formula can replace human judgment in assessing the significance of present enrollment trends into the future.[1]

SUMMARY

The significance of the literature review to the present study consists primarily of the finding that the modified cohort-survival technique utilized to project state enrollment figures is a satisfactory method for prediction, and that more sophisticated statistical techniques, despite their increased cost and time consumption, provide no more accurate forecasts than does the modified cohort survival method.

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1 Abe Gottlieb, "The Total Community Provides - A Planning Approach to School Enrollment Forecasts," American School Board Journal, 128: 110, February, 1954.

CHAPTER 4

ANALYSIS OF PUPIL ENROLLMENT DATA

In Chapter 4, actual and projected pupil population statistics are analyzed for the United States as a whole and for New York State in particular.

LIVE BIRTHS AND BIRTH RATES

One of the most important statistics in the projection of grade-by-grade pupil enrollments is live births. Live births are of the utmost importance in the projection of Kindergarten and Grade 1 enrollments. As grade projections move further from actual live births, subsequent grade-by-grade projections tend to be less accurate.

Actual Live Births

Table 10.1 and Figure 10.1 contain data on live births recorded in the United States over the past several decades. In 1950, live births in the United States totalled 3.632 million rising to a national high of 4.308 million in 1957. From 1957 to 1963 live births declined. However, the number remained about 4 million. Starting in 1964, live births in the United States declined rather sharply even though there were slight rises in live births in several years. The number of live births recorded for 1975 is 3,285,000.

The State of New York is no exception to the national trend in live births. In 1960, there were 359,000 live births

TABLE 10.1

TREND DATA ON LIVE BIRTHS AND BIRTH RATES, FOR UNITED STATES AND NEW YORK STATE

	UNITED STATES (in Thousands)		NEW YORK STATE (in Thousands)	
YEAR	LIVE BIRTHS	BIRTH RATES	LIVE BIRTHS	BIRTH RATES
(1)	(2)	(3)	(4)	(5)
1960	4,350	23.9	359	21.3*
1961	4,259	23.0	362	21.4
1962	4,185	22.3	354	20.6
1963	4,119	21.6	356	20.4
1964	3,940	20.4	351	19.9
1965	3,716	19.0	336	18.9
1966	3,608	18.2	321	17.9
1967	3,520	17.6	308	17.1
1968	3,567	17.7	302	16.7
1969	3,652	17.9	310	17.1
1970	3,709	18.0	317	17.3
1971	3,408	16.4	284	15.4
1972	3,191	15.2	253	13.7
1973	3,112	14.7	239	12.9
1974	3,178	14.9	239	13.0
1975	3,285	15.3	236	12.8
1976	3,425***	15.9***	247**	13.0**
1977	3,575	16.4	260	13.7
1978	3,720	16.9	273	14.0
1979	3,865	17.4	286	14.5
1980	3,978	17.8	290	14.8
1981	4,049	17.9	296	14.9
1982	4,104	18.0	300	15.0
1983	4,144	18.0	306	15.1
1984	4,167	17.9	312	15.2
1985	4,176	17.8	313	15.0
1986	4,172	17.6	314	15.0
1987	4,157	17.3	313	14.9
1988	4,132	17.1	311	14.7
1989	4,095	16.8	308	14.5
1990	4,050	16.5	305	14.4

*SOURCE: N.Y. Health Dept. Office of Biostatistics "N.Y. State Vital Statistics Report, 1975". 1960 to 1975.
**SOURCE: From 1976 to 1990 Live Births and Birth rates were estimated by staff members of Section 842, PL83-80.
***SOURCE: U.S. Bureau of Census. "Population Estimates and Projections" Series P25 No. 601 October 1975 Series II Population Projections, p.p. 33-35.

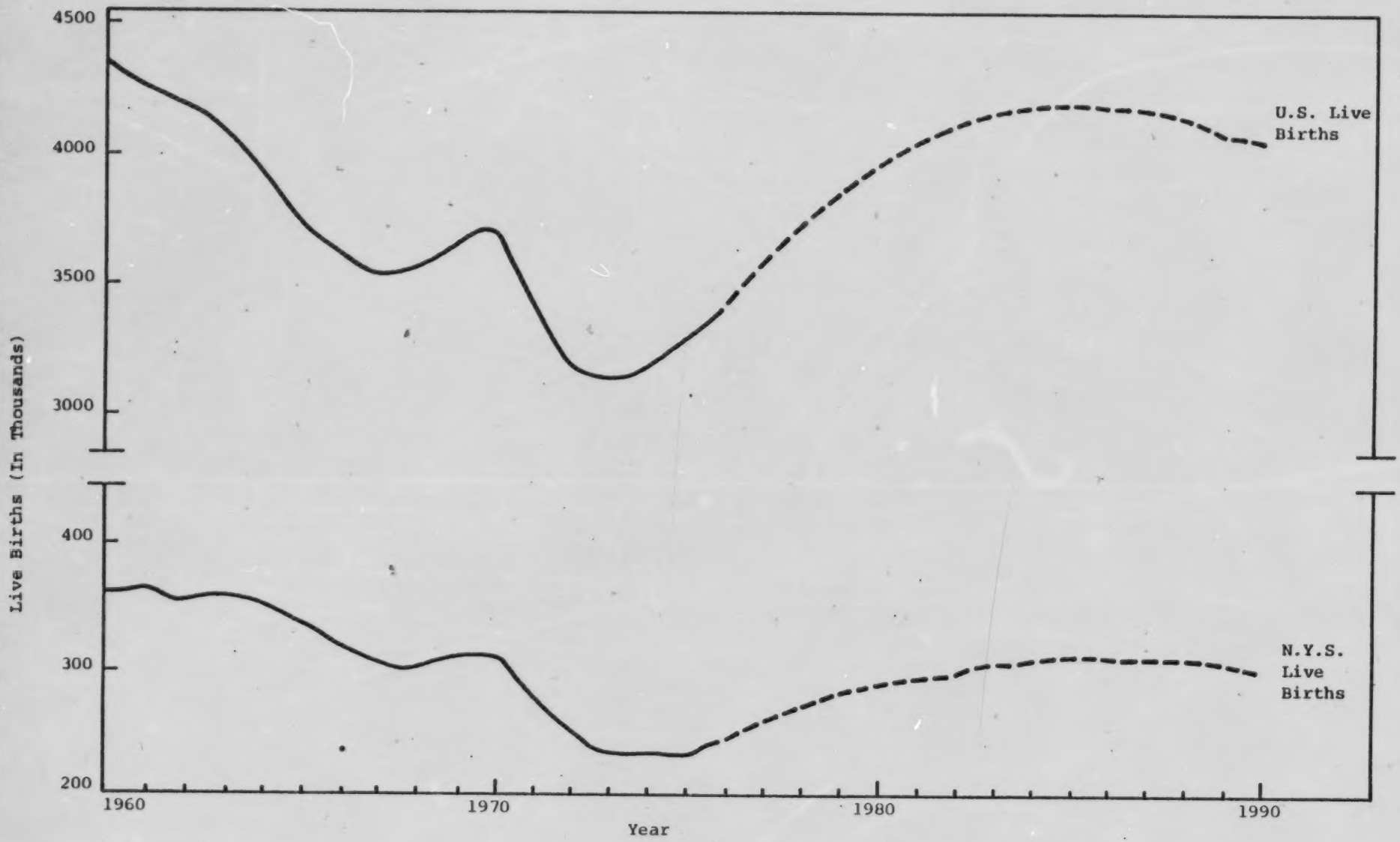

Figure 10.1. Trend Data on Live Births in United States and in New York State From 1960 to 1990.

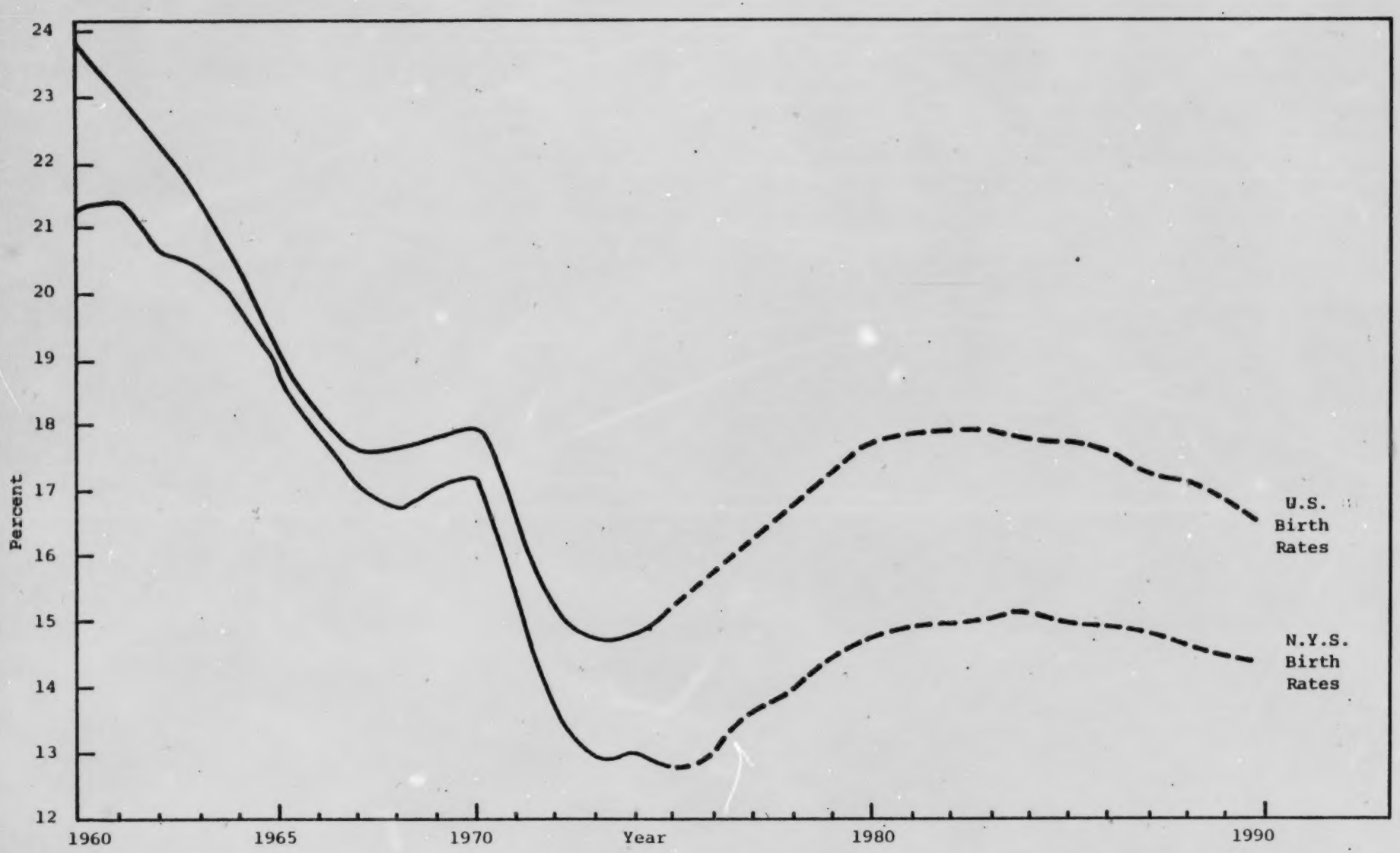

Figure 10.2. Trend Data on Live Birth Rates in the United States and in New York State from 1960 to 1990.

recorded in New York State. The figure rose to 362,000 in 1961. The trend line shows a continuous decline although in some years as was the case in the nation as a whole, there were slight rises in live births. For example, in 1965 there were 3.716 million births in the United States and in 1975 the figure was 3.285 -- an 11.6 percent decrease. In New York State, the corresponding figures were 336,000 in 1965 and 236,000 in 1975 -- a 29.8 percent decrease.

Actual
Birth Rates

The total number of live births is a function of both the rate at which women give birth and the number of women in the child bearing cohort. For this reason, it is not enough to know the statistics on just birth rates or on just the number of women between the ages of 14 and 45.

Birth rates in the United States as a whole, and in New York State in particular, show similar although not identical trends. In both instances, the trend lines show declining birth rates. In 1960, the birth rate in the United States was 23.9 and one and a half decades later, 15.3 -- a 64.01 percent decline. In 1960, the birth rate in New York State was 21.3 and in 1975 12.8 -- a 60.09 percent decline.

The importance of comparing New York State with national data lies in the fact that if trend data for both groups moved in the same direction in the past, and at about the same rate, then calculations for one group serve as a check on the other. This certainly was the case for trend data on live births and

birth rates in New York State and the United States. Thus, New York State trend data for live births and birth rates was checked against trend data for the United States for reasonableness for numbers and direction of increases and decreases.

Projected Live Births
and Birth Rates

Not only were birth rates analyzed to project live births, but so were female age pyramids. Such data are not shown here in detail.[1]

For 1976 to and including 1975, the number of live births and the birth rates were obtained from the New York Health Department Office of Biostatistics.[2]

In 1976, live births were projected to be 3.425 million with a birth rate of 15.9. Live births are projected to rise to a high of 4.176 million in 1985, decreasing slightly each year to 1990 to a level of 4.050 million live births. The birth rate is expected to rise to a high of 18.0 in 1982-83 and decrease to 16.5 in 1990. This figure is still below 1960's 23.9 birth rate.

As was indicated previously, the trend in live births and birth rates in New York State were expected to parallel those in the United States, not in numbers, but in direction. Thus, live births are estimated to be 247,000 in New York State at a birth rate of 13.0 in 1976. Live Births were projected to in-

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[1] See Current Population Reports, Series -25, United States Bureau of the Census for detailed age pyramids.

[2] See "New York State Vital Statistics Report, 1975." From 1976 to 1990 Live Births and Birth Rates were estimated by staff members of Section 842, PL 83-80.

crease each year until a high of 314,000 is reached in 1986 at which time the trend is slightly downward until in 1990 a figure of 305,000 live births is projected. The birth rates show a similar but not identical trend going from a projected 13.0 in 1976 to a high of 15.2 in 1984 to 14.4 in 1990.

PUPIL ENROLLMENTS IN PUBLIC ELEMENTARY AND SECONDARY SCHOOLS IN NEW YORK STATE

The statistical procedure utilized in projecting pupil enrollments was discussed in Chapter 2. Therefore, only the numbers and trend data regarding public pupil enrollments are analyzed in this section.

Data on public pupil enrollments in New York State are contained in Tables 10.2, 10.3, 10.4 and 10.5.

Pupil Enrollments in United States

Over the seven and a half decades of this century, pupil enrollments in elementary and secondary schools in the United States increased each five-year period except for the last half-decade. For example, 1905 increased 6 percent over 1900; 1910 increased 8 percent over 1905; 1915 increased 10 percent over 1910. Whereas 1975 decreased 2.3 percent when compared to 1970's pupil enrollments. The half-decades of greatest increase as might be expected were those covering the years 1950 to 1975. For example, 1955 increased 16 percent over 1950; 1960 increased 17 percent over 1955; and 1965 increased 17 percent over 1960.

Table 10.2 contains public school enrollment in elemen-

TAPLE 10.2

TREND DATA ON PUBLIC PUPIL ENROLLMENTS GRADES K-12 OF REGULAR DAY SCHOOLS, 1965 TO 1990

FALL OF YEAR	PUBLIC ENROLLMENT UNITED STATES K-12	PUBLIC ENROLLMENT NEW YORK STATE K-12	BOCES ENROLLMENT	NONPUBLIC ENROLLMENT NEW YORK STATE K-12
(1)	(2)**	(3)	(4)	(5)
1965	42,143,504	3,176,574		
1966	43,055,055	3,248,879		891,146
1967	43,886,805	3,325,477		884,112
1968	44,961,662	3,397,413		872,717
1969	45,618,578	3,442,809		841,378
1970	45,903,371	3,489,245	17,058	784,058
1971	46,081,000	3,503,859	19,175	754,206
1972	45,754,000	3,474,392	20,413	719,372
1973	45,408,805	3,427,560	25,772	679,397
1974	45,000,000	3,401,636	23,237	643,812
1975	44,838,490	3,382,369	23,646	621,345
1976	44,200,000	3,355,497	24,112	599,777
1977	43,500,000	3,299,112	23,201	578,565
1978	42,700,000	3,223,821	22,293	558,575
1979	42,000,000	3,142,935	21,530	539,045
1980	41,400,000	3,055,733	20,800	521,293
1981	41,000,000	2,974,706	20,104	506,069
1982	40,800,000	2,906,825	19,471	493,298
1983	41,000,000	2,862,267	19,345	482,825
1984	40,300,000	2,840,413	19,706	475,083
1985	40,800,000	2,827,247	20,277	469,735
1986*	41,400,000	2,816,205	20,903	465,776
1987*	42,000,000	2,803,115	21,616	463,147
1988*	42,600,000	2,795,892	22,268	461,988
1989*	43,200,000	2,820,073	22,842	461,106
1990	43,800,000	2,870,830	23,286	461,188

SOURCE: Based on data provided by the New York State Education Department, Information Center on Education

*SOURCE: Figures estimated by Section 842 staff.

**SOURCE: Data in Column (2) were obtained from "Projections of Educational Statistics to 1984-85" 1975 Edition U.S. Dept. of HEW, National Center for Educational Statistics, p.19.

NOTE: Figures in Column 5 include Ungraded and Post Graduate. Figures in Column 5 do not include Pre-K.

TABLE 10.3

TREND DATA ON RATIOS OF KINDERGARTEN AND GRADE 1 PUBLIC ENROLLMENTS TO LIVE BIRTHS, NEW YORK STATE

CALENDAR YEAR OF BIRTHS	RESIDENT LIVE BIRTHS	SCHOOL YEAR (OCTOBER)	KINDERGARTEN DATA		GRADE 1 DATA	
			PUPILS ENROLLED	RATIO TO BIRTHS 5 YEARS PREVIOUS	PUPILS ENROLLED	RATIO TO BIRTHS 6 YEARS PREVIOUS
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1959	360,662	1965	283,463	.7891	270,793	.7508
1960	359,222	1966	291,410	.8045	273,594	.7616
1961	362,247	1967	284,711	.8046	282,055	.7786
1962	353,835	1968	286,693	.8059	280,886	.7938
1963	355,752	1969	282,877	.8050	283,955	.7982
1964	351,390	1970	271,683	.8096	282,643	.8044
1965	335,576	1971	256,528	.7999	272,250	.8113
1966	320,699	1972	242,819	.7883	257,504	.8029
1967	308,047	1973	230,961	.7655	246,156	.7991
1968	301,697	1974	230,742	.7448	240,011	.7955
1969	309,794	1975	229,132	.7225	245,511	.7925
1970	317,153	1976	205,760	.7239	251,821	.7940
1971	284,219	1977	183,662	.7250	226,292	.7962
1972	253,325	1978	173,043	.7250	201,914	.7971
1973	238,667	1979	173,564	.7257	190,239	.7971
1974	239,166	1980	168,480	.7145	190,767	.7976
1975	235,803	1981	177,817	.7200	187,200	.7939
1976	246,967	1982	187,153	.7200	197,574	.8000
1977	259,935	1983	196,490	.7200	207,948	.8000
1978	272,903	1984	205,826	.7200	218,322	.8000
1979	285,869	1985	209,561	.7220	228,695	.8000
1980	290,250	1986*	213,486	.7220	232,200	.8000
1981	295,687	1987*	216,690	.7220	236,550	.8000
1982	300,125	1988*	220,832	.7220	240,100	.8000
1983	305,862	1989*	224,500	.7200	244,690	.8000
1984	311,806	1990	225,000	.7220	249,445	.8000

NOTE: These figures do not include Pre-K, Ungraded and Post Graduate.

SOURCE: Based on data provided by the New York State Education Department, Information Center on Education.
*SOURCE: Figures estimated by Section 842 staff.

TABLE 10.4

TREND DATA ON RATIOS GRADES 2 TO 6 PUBLIC PUPIL ENROLLMENTS TO GRADES 1 TO 5 PUBLIC PUPIL ENROLLMENTS OF THE PREVIOUS YEAR, NEW YORK STATE

SCHOOL YEAR (OCTOBER)	GRADE 2 DATA PUPILS ENROLLED	RATIO TO GRADE 1 PREVIOUS YEAR	GRADE 3 DATA PUPILS ENROLLED	RATIO TO GRADE 2 PREVIOUS YEAR	GRADE 4 DATA PUPILS ENROLLED	RATIO TO GRADE 3 PREVIOUS YEAR	GRADE 5 DATA PUPILS ENROLLED	RATIO TO GRADE 4 PREVIOUS YEAR	GRADE 6 DATA PUPILS ENROLLED	RATIO TO GRADE 5 PREVIOUS YEAR
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1964	259,208		248,376		242,097		235,300		224,959	
1965	262,136	.9831	256,331	.9889	248,036	.9986	242,139	1.0001	233,459	.9922
1966	263,883	1.1174	258,508	.9861	256,885	1.0021	246,857	.9952	240,544	.9934
1967	269,124	.9837	263,291	.9978	261,763	1.0126	257,348	1.0018	246,974	1.0005
1968	275,808	.9866	267,043	.9941	263,589	1.0042	260,574	.9989	256,331	.9999
1969	273,035	.9720	272,651	.9886	266,739	.9989	263,691	1.0004	261,092	1.0020
1970	277,353	.9768	270,896	.9922	272,098	.9980	267,547	1.0030	262,651	.9961
1971	274,884	.9691	273,387	.9823	270,477	.9949	271,051	.9926	265,889	.9903
1972	262,970	.9659	268,884	.9782	270,005	.9876	267,156	.9877	266,906	.9847
1973	249,659	.9695	257,189	.9780	266,640	.9917	266,705	.9878	264,050	.9884
1974	239,012	.9710	246,472	.9872	255,828	.9947	263,753	.9892	263,196	.9868
1975	233,426	.9726	236,489	.9894	243,974	.9899	252,538	.9871	262,300	.9945
1976	239,730	.9765	232,621	.9966	234,957	.9935	242,127	.9924	251,536	.9960
1977	245,375	.9744	238,898	.9965	231,113	.9935	233,170	.9924	241,146	.9959
1978	220,471	.9743	244,523	.9965	237,347	.9935	229,352	.9924	232,221	.9959
1979	196,710	.9742	219,716	.9966	242,935	.9935	235,525	.9924	228,415	.9959
1980	185,335	.9742	196,041	.9966	218,295	.9935	241,067	.9924	234,553	.9959
1981	185,976	.9749	184,705	.9966	194,767	.9935	216,614	.9924	240,079	.9959
1982	181,958	.9720	185,344	.9966	183,504	.9935	193,267	.9924	215,726	.9959
1983	192,042	.9720	181,339	.9966	184,139	.9935	182,091	.9924	192,475	.9959
1984	202,125	.9720	191,389	.9966	180,161	.9935	182,721	.9924	181,345	.9959
1985	212,209	.9720	201,438	.9966	190,145	.9935	178,773	.9924	181,972	.9959
1986*	222,291	.9720	211,487	.9966	200,138	.9935	188,700	.9924	178,040	.9959
1987*	225,698	.9720	221,535	.9966	210,112	.9935	198,617	.9924	187,926	.9959
1988*	229,927	.9720	224,930	.9966	220,095	.9935	208,515	.9924	197,803	.9959
1989*	234,392	.9762	229,145	.9966	223,468	.9935	218,422	.9924	207,660	.9959
1990	238,427	.9744	233,596	.9966	228,084	.9954	222,364	.9951	217,506	.9958

NOTE: These figures do not include Pre-K, Ungraded and Post Graduate.

SOURCE: Based on data provided by the New York State Education Department, Information Center on Education.
*SOURCE: Figures estimated by Section 842 staff.

TABLE 10.5

TREND DATA ON RATIOS GRADES 7 TO 12 PUBLIC PUPIL ENROLLMENTS TO GRADES 6 TO 11 PUBLIC PUPIL ENROLLMENTS OF PREVIOUS YEAR, NEW YORK STATE

SCHOOL YEAR (OCTOBER)	GRADE 7 DATA		GRADE 8 DATA		GRADE 9 DATA		GRADE 10 DATA		GRADE 11 DATA		GRADE 12 DATA	
	PUPILS ENROLLED	RATIO TO GRADE 6 PREVIOUS YEAR	PUPILS ENROLLED	RATIO TO GRADE 7 PREVIOUS YEAR	PUPILS ENROLLED	RATIO TO GRADE 8 PREVIOUS YEAR	PUPILS ENROLLED	RATIO TO GRADE 9 PREVIOUS YEAR	PUPILS ENROLLED	RATIO TO GRADE 10 PREVIOUS YEAR	PUPILS ** ENROLLED	RATIO TO GRADE 11 PREVIOUS YEAR
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1964	232,706		217,491		237,425		234,536		200,978		192,520	
1965	232,661	1.0342	221,573	.9521	248,501	1.1425	237,038	.9983	211,829	.9031	180,463	.8979
1966	240,611	1.0306	223,584	.9609	252,067	1.1376	245,829	.9892	214,045	.9029	188,715	.8908
1967	249,021	1.0352	233,566	.9707	257,311	1.1508	251,487	.9977	255,081	1.0376	191,902	.8966
1968	254,759	1.0350	241,579	.9841	269,979	1.1431	257,521	1.0033	228,991	.9071	199,908	.8676
1969	264,234	1.0308	248,444	.9752	275,424	1.1401	265,243	.9825	230,855	.8965	202,604	.8848
1970	269,264	1.0313	257,328	.9739	286,231	1.1521	274,493	.9966	239,885	.9044	204,516	.8859
1971	268,882	1.0200	261,671	.9678	295,777	1.1449	281,961	.9822	247,816	.8996	212,968	.8846
1972	268,113	1.0084	259,895	.9666	298,838	1.1420	290,286	.9814	251,767	.8929	217,722	.8786
1973	270,969	1.0152	261,291	.9746	295,668	1.1376	294,944	.9870	256,922	.8851	219,560	.8721
1974	267,910	1.0146	262,991	.9706	299,797	1.1474	294,493	.9960	257,428	.8728	224,838	.8751
1975	269,116	1.0225	261,312	.9754	304,126	1.1564	298,914	.9971	259,072	.8797	226,731	.8808
1976	268,423	1.0234	262,619	.9747	303,826	1.1622	303,275	.9972	265,903	.8896	228,847	.8833
1977	257,409	1.0234	261,835	.9755	305,728	1.1642	303,068	.9975	269,685	.8892	234,417	.8815
1978	246,777	1.0234	251,035	.9752	305,368	1.1676	305,040	.9977	269,257	.8884	237,616	.8811
1979	237,644	1.0234	240,617	.9750	293,063	1.1674	304,786	.9981	270,816	.8878	236,899	.8798
1980	233,750	1.0234	231,697	.9750	281,163	1.1685	292,560	.9983	270,312	.8869	237,999	.8788
1981	240,042	1.0234	227,906	.9750	270,738	1.1685	280,685	.9983	259,471	.8869	237,550	.8788
1982	245,696	1.0234	234,040	.9750	266,308	1.1685	270,278	.9983	248,940	.8869	228,024	.8788
1983	220,774	1.0234	239,554	.9750	273,476	1.1685	265,856	.9983	239,709	.8869	218,768	.8788
1984	196,979	1.0234	215,255	.9750	279,919	1.1685	273,011	.9983	235,787	.8869	210,657	.8788
1985	185,588	1.0234	192,054	.9750	251,525	1.1685	279,443	.9983	242,134	.8869	207,210	.8788
1986*	186,230	1.0234	180,948	.9750	224,415	1.1685	251,097	.9983	247,838	.8869	212,787	.8788
1987*	182,206	1.0234	181,574	.9750	211,438	1.1685	224,033	.9983	222,698	.8869	217,800	.8788
1988*	192,323	1.0234	177,650	.9750	212,169	1.1685	211,079	.9983	198,695	.8869	195,707	.8788
1989*	202,432	1.0234	187,514	.9750	207,584	1.1685	211,808	.9983	187,206	.8869	174,613	.8788
1990	212,499	1.0233	197,341	.9749	219,090	1.1684	207,233	.9983	187,853	.8869	164,516	.8788

NOTE: These figures do not include Pre-K, Ungraded and Post Graduate.

SOURCE: Based on data provided by the New York State Education Department, Information Center on Education.
*SOURCE: Figures estimated by Section 842 Staff.

**Column 12 figure includes P.G.

tary and secondary schools in the United States. The trend follows live births as might be expected. From 42.1 million pupils in 1965, public school enrollments increased reaching a high of 46.1 million in 1971. Enrollments declined each year thereafter reaching a figure of 44.8 million in 1975. Public school enrollments in the United States are expected to decline to a projected low of 40.3 million in 1985. Increases are projected each year thereafter with a projection of 43.8 million in 1990.

Public Enrollments
in New York State

Table 10.2 contains data on actual and projected public pupil enrollments in elementary and secondary schools in New York State from 1965 to 1990. Figure 10.3 portrays graphically the numerical data contained in Table 10.2.

In 1965, there were enrolled 3.176 million pupils in pupil elementary and secondary schools in New York State. In 1970, the figure was 3.489 million; and in 1975, there were 3.382 million. Thus, 1970's enrollment was 9.9 percent over 1965 and 1975's enrollment was 3.1 percent under 1970. This decline in the last half-decade follows a national trend. In New York State, this decline is projected to last until 1988 when 2.795 million pupils are projected. The figure is projected to increase to 2.870 million in 1990. However, note that the elementary school enrollments peak and bottom out differently than for secondary public school enrollments. This has consequences for teaching training institutions, negotiated teacher agreements, retraining of experienced teachers, and the closing

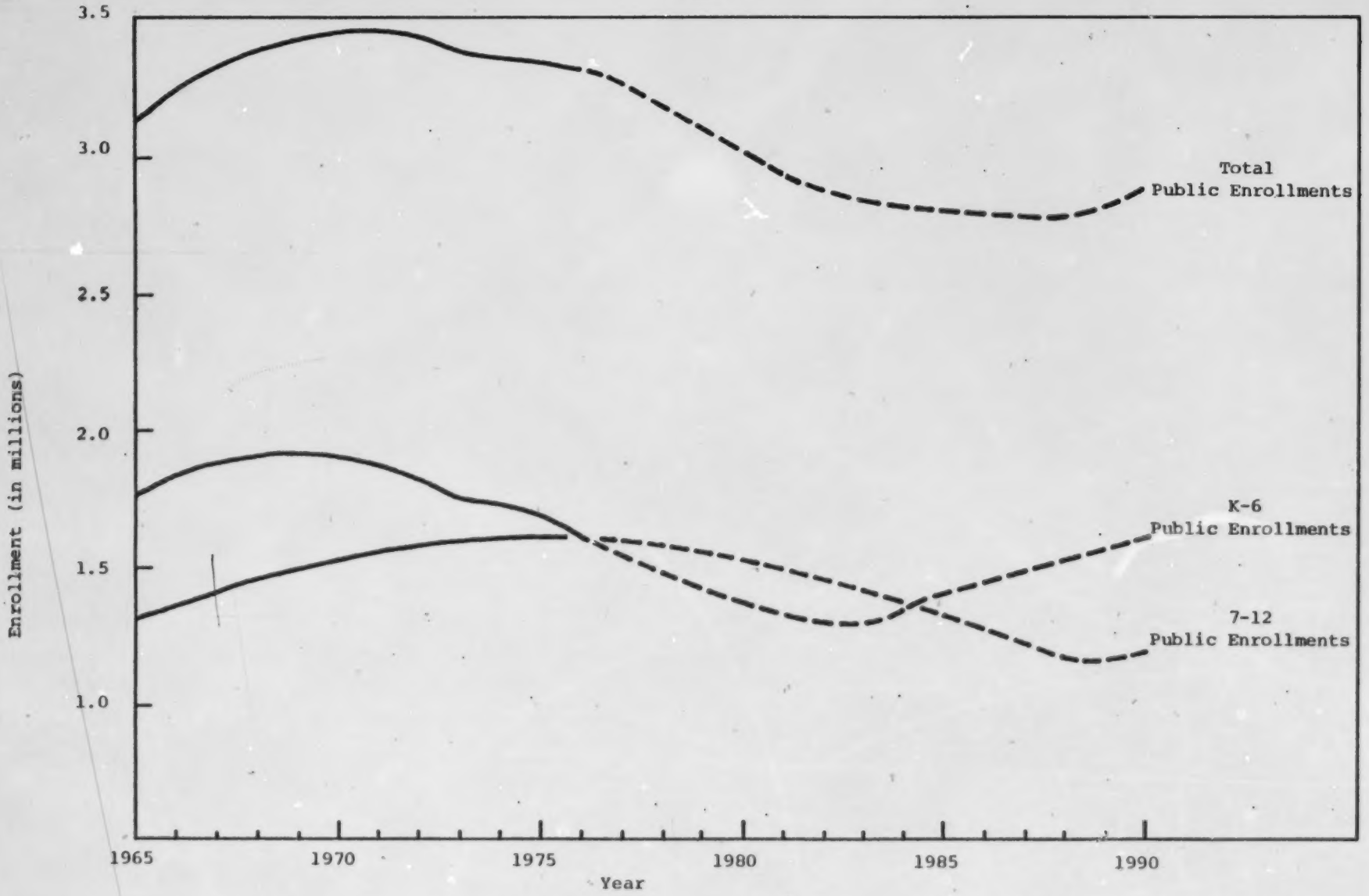

Figure 10.3. Actual Public Pupil Enrollments For New York State From 1965 to 1975 and Public Pupil Enrollments Projection For New York State From 1976 to 1990 by Grades Kindergarten to 6, Grades 7-12, and Grades K-12.

and opening of schools.

Figure 10.3 shows the trend in public elementary school enrollments (Grades K-6) separately from public secondary school enrollments (Grades 7-12) in New York State. In 1965, elementary school enrollments totalled 1,796 million and secondary enrollments, 1,332 million. Elementary school enrollments peaked in 1970 at a level of 1.905 million whereas secondary school enrollments did not do so until 1976, some six years later at 1.632 million. The decline in elementary public school enrollments is projected to continue until 1983 bottoming out at 1.336 million. From this low, elementary public school enrollments are projected to increase reaching 1.614 million in 1990. At the secondary level, public school enrollments in New York State are not projected to bottom out until 1989 at 1.171 million -- six years later than the elementary low point. Of course, emphasis on career education, changes in high school holding power, changes in work-study programs, as well as other factors could change the secondary enrollment trend from that projected.

Survival Ratios
Public School Enrollments

Tables 10.3, 10.4, and 10.5 contain not only grade-by-grade public elementary and secondary enrollment data for New York State, but also grade-by-grade survival ratios. These survival ratios are plotted in Figures 10.4, 10.5, 10.6, 10.7, 10.8, 10.9, and 10.10.

As Figure 10.4 indicates, survival ratios of kindergarten to live births five years previous and of Grade 1 to

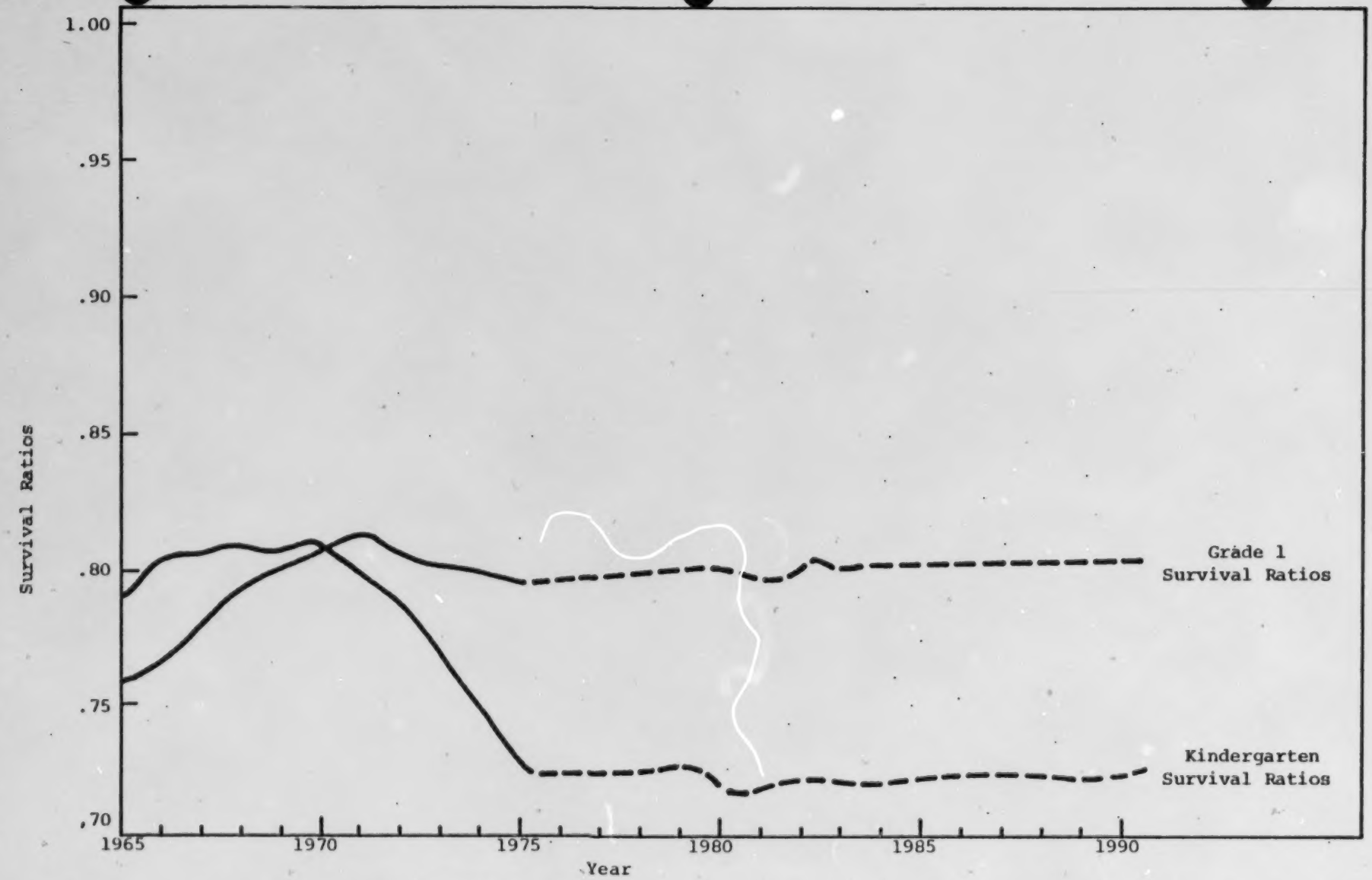

Figure 10.4. Actual and Projected Survival Ratios of Kindergarten Enrollment to Live Births and First Grade Enrollment to Kindergarten in New York State Public Elementary and Secondary Schools, 1965 to 1990.

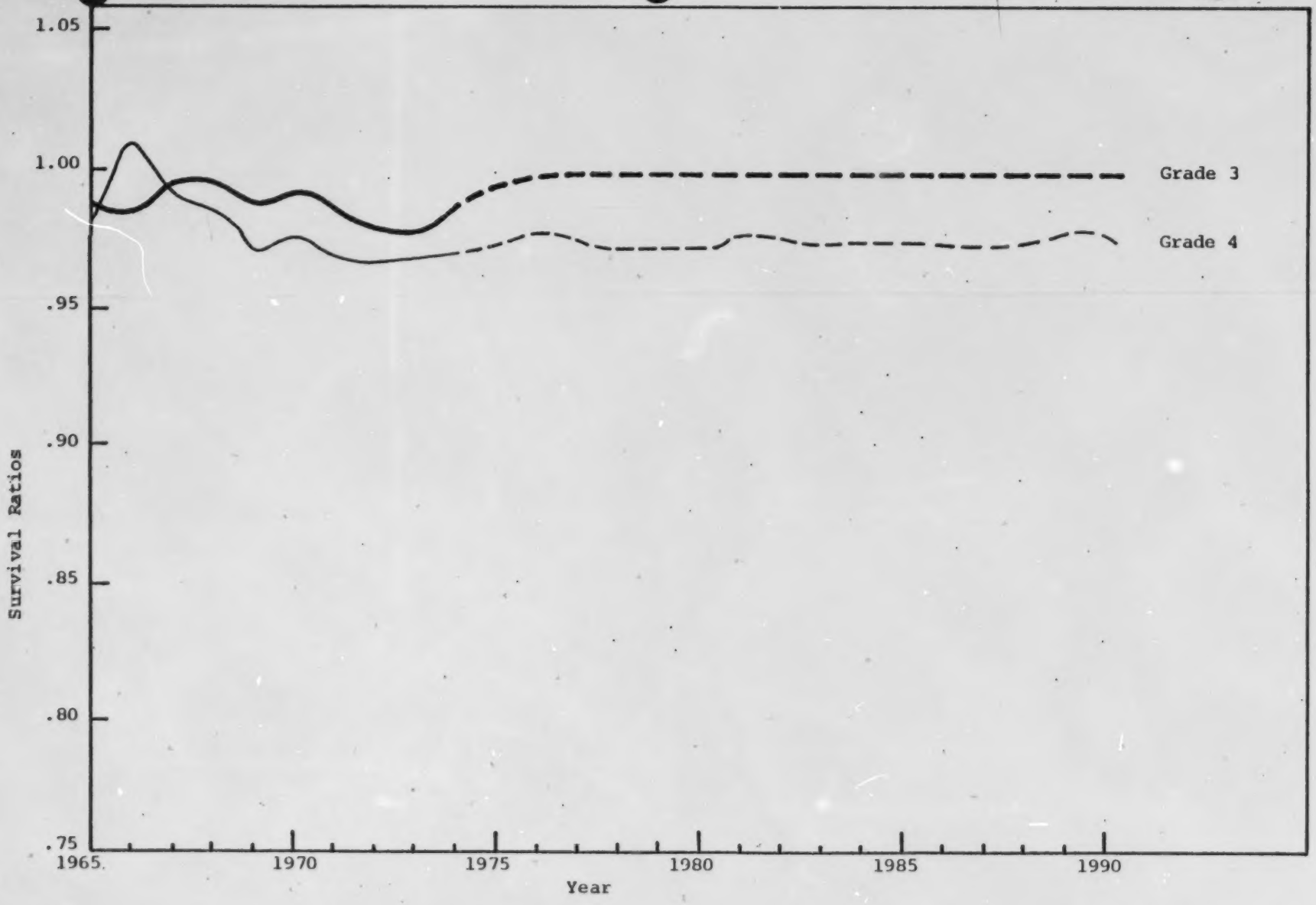

Figure 10.5. Actual and Projected Survival Ratios of Grade 2 to Grade 1 Previous Year's Enrollments and Grade 3 to Grade 2 Previous Year's Enrollments in New York State Public Elementary and Secondary Schools, 1965 to 1990.

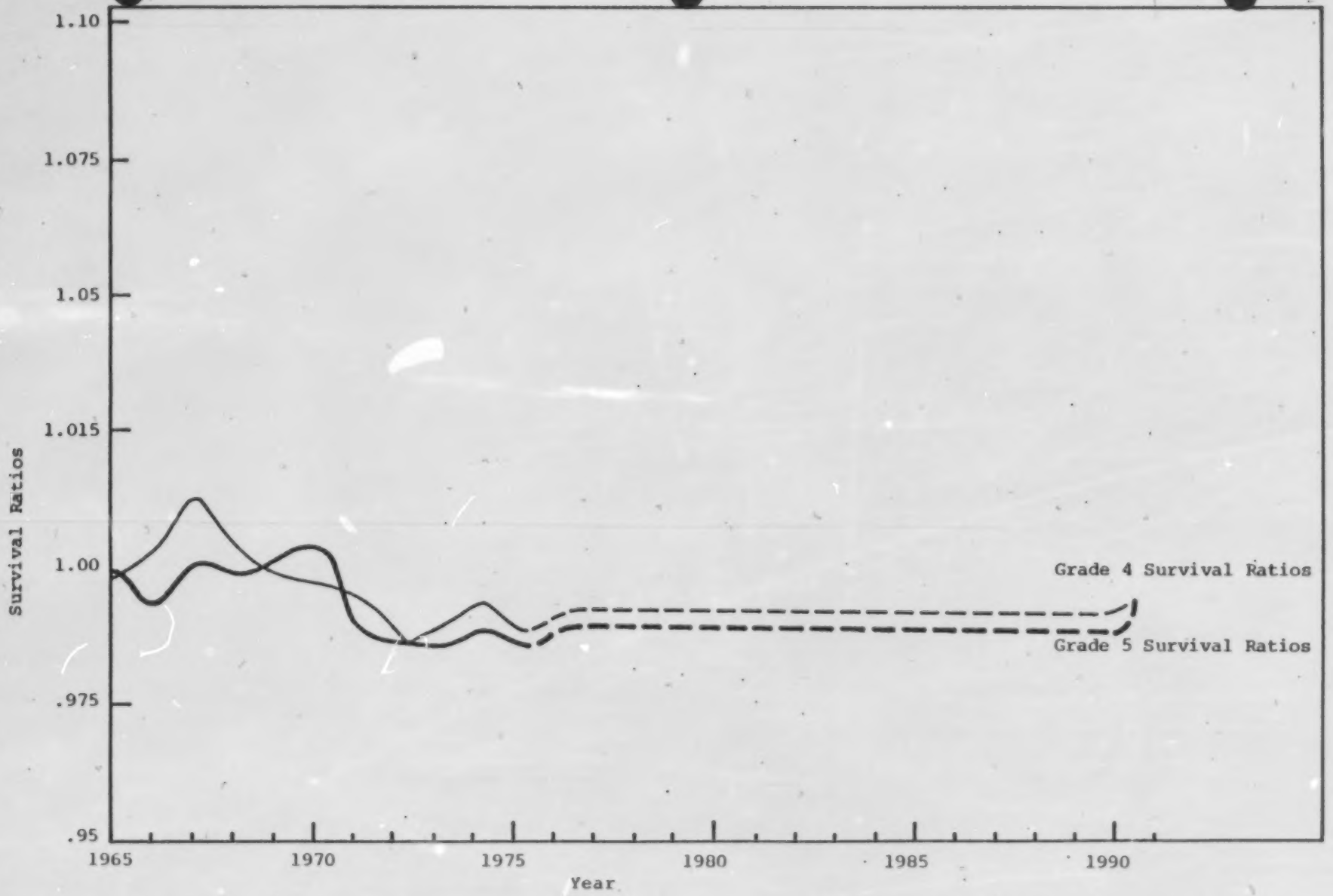

Figure 10.6. Actual and Projected Survival Ratios of Grade 4 to Grade 3 Previous Year's Enrollments and Grade 5 to Grade 4 Previous Year's Enrollments in New York State Public Elementary and Secondary Schools, 1965 to 1990.

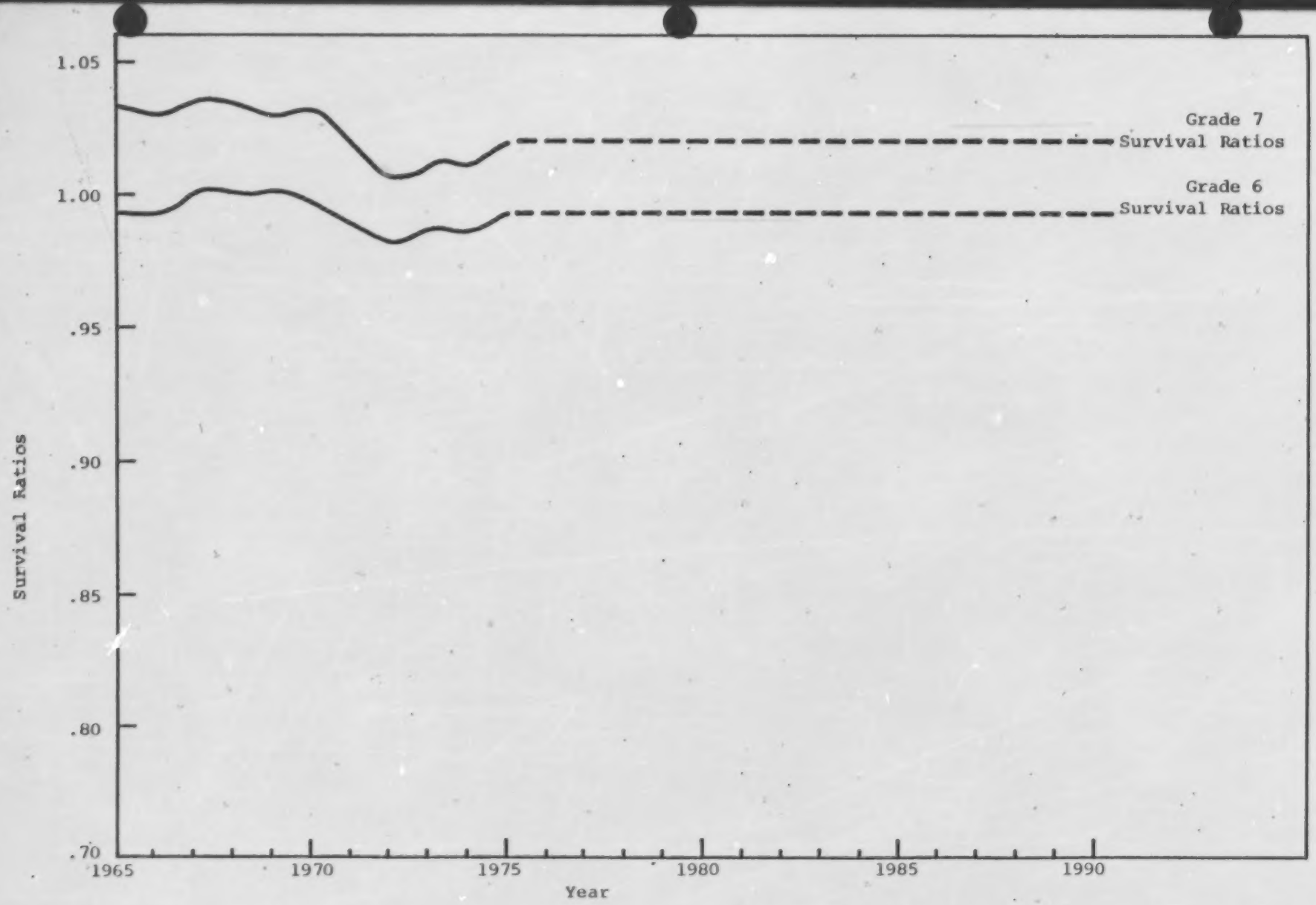

Figure 10.7. Actual and Projected Survival Ratios of Grade 6 to Grade 5 Previous Year's Enrollments and Grade 7 to Grade 6 Previous Year's Enrollments in New York State Public Elementary and Secondary Schools, 1965 to 1990.

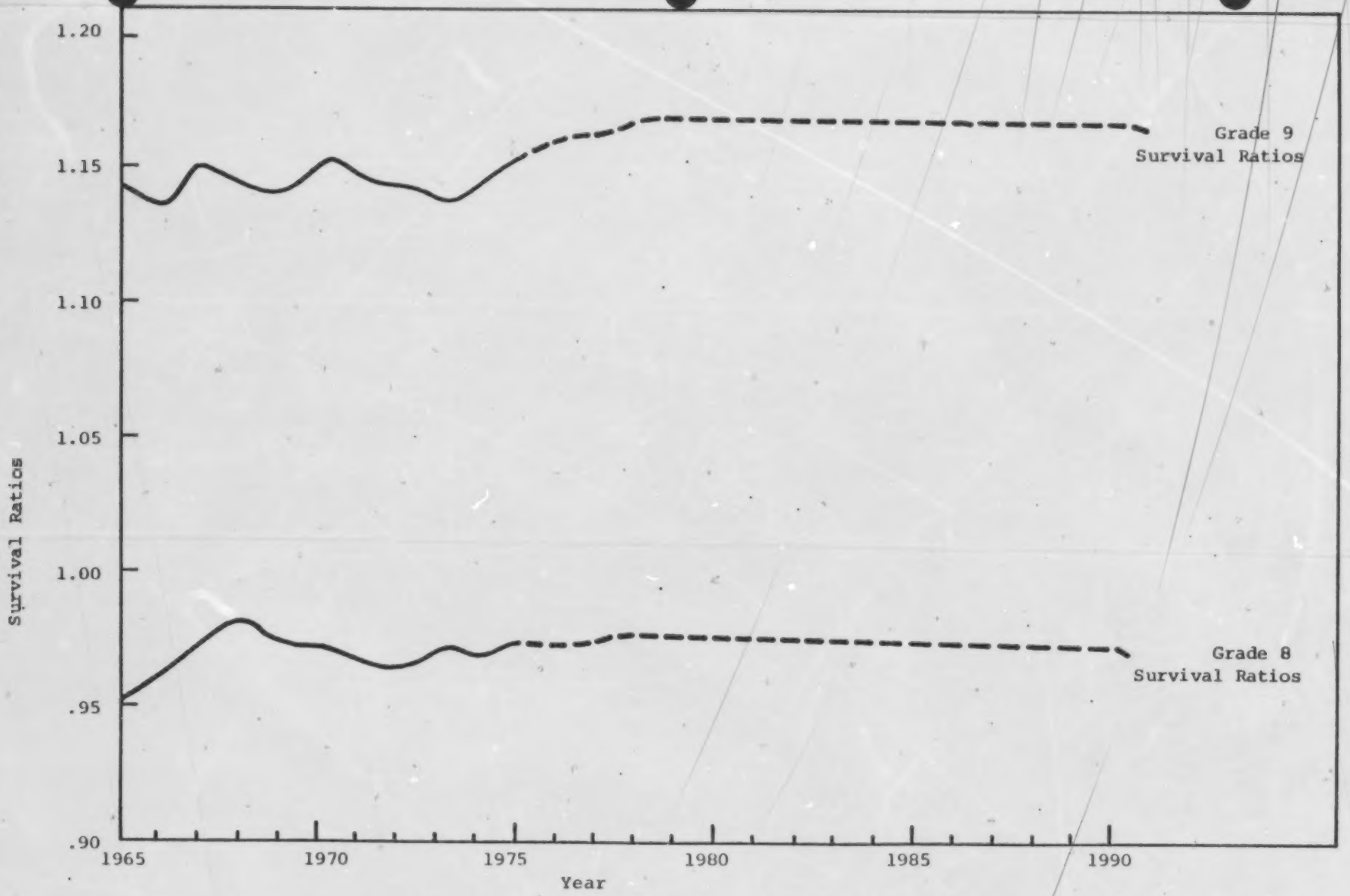

Figure 10.8. Actual and Projected Survival Ratios of Grade 8 to Grade 7 Previous Year's Enrollments and Grade 9 to Grade 8 Previous Year's Enrollments in New York State Public Secondary Schools, 1965-1990.

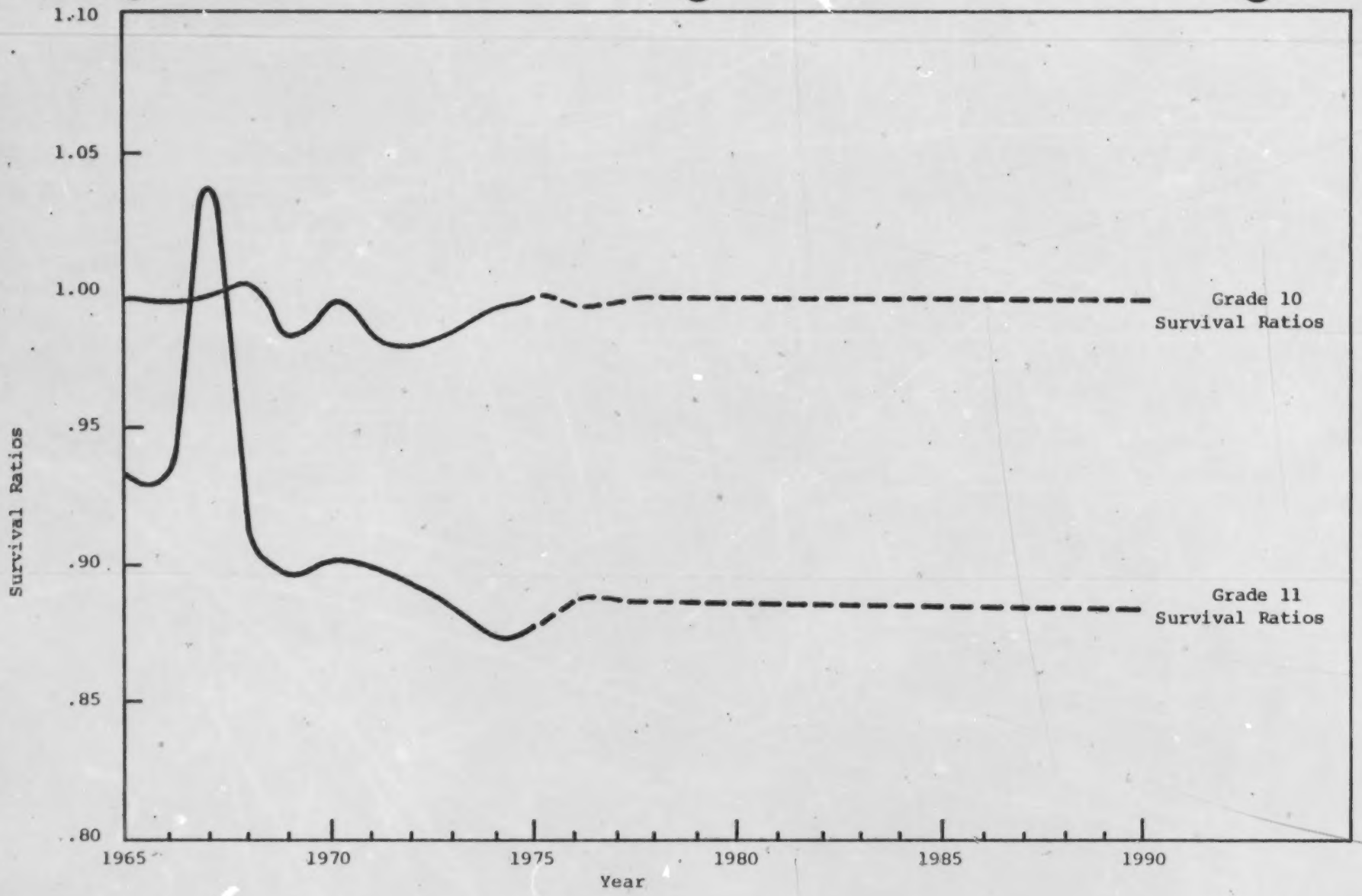

Figure 10.9. Actual and Projected Survival Ratios of Grade 10 to Grade 9 Previous Year's Enrollments and Grade 11 to Grade 10 Previous Year's Enrollments in New York State Public Secondary Schools, 1965 to 1990.

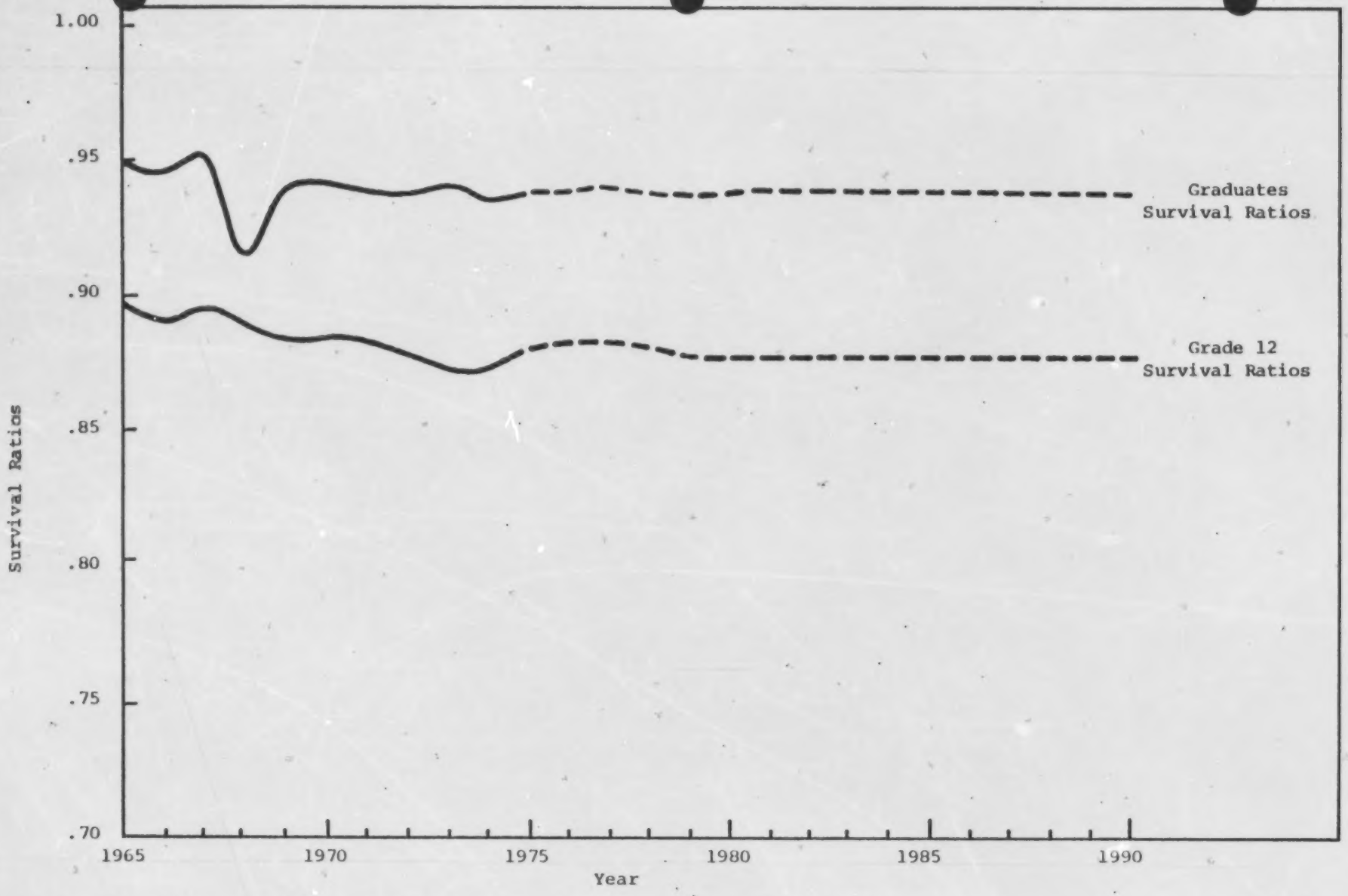

Figure 10.10. Actual and Projected Survival Ratios of Grade 12 to Grade 11 Previous Year's Enrollments and Graduates to Grade 12 Previous Year's Enrollments in New York State Public Secondary Schools, 1965 to 1990.

live births six years previous show a slightly different pattern. The kindergarten survival ratios tended to decrease from about .80 to about .72, whereas the survival ratios for Grade 1 tended to hover about the .80 level. Unless greater efforts are made to enroll kindergarten pupils (i.e., better compensatory educational programs for minority students, recruiting students away from private and parochial schools, better bus transportation for children living in sparsely settled areas, etc.) the projected .72 survival ratio will probably hold in the years ahead. At the Grade 1 level, most of the pupils are already enrolled in school. Therefore, any increase in pupil enrollments in the public schools must come at the expense of the nonpublic schools. Since this appears unlikely in the decade ahead, the .80 survival ratio for Grade 1 public schools enrollments appears reasonable.

Figure 10.5 contains survival ratios for Grades 2 and 3. These ratios tend to be exceedingly high stablizing at the .96 to .98 values. For this reason the projected ratios around the .97 value appear to be reasonable for the years ahead. Without drastic changes in child mortality rates, which at this age level appear unlikely, the survival ratios for Grade 2 appear unlikely to change direction greatly. Thus, changes in public school enrollments in Grade 2 can only come about through large increases or decreases in live births and shifts of pupils from nonpublic to public schools. Grade 3 shows a pattern similar to that for Grade 2 except the survival ratios were consistently higher. These ratios tended to hover about .99 and consequently no changes are projected in these ratios for the ensuing years

to 1990. The figure of .9966 therefore, appears to be reasonable for projective purposes.

Figures 10.6 and 10.7 contain plots of survival ratios for Grades 4, 5, 6, and 7. Grades 4, 5, and 6 follow exceedingly similar patterns to Grades 2 and 3 and discussed in previous paragraphs. Thus the projected survival ratios of .9935, .9924, and .9957 for Grades 4, 5, and 6 respectively appear reasonable. Grade 7 survival ratios warrant further analysis, however. While they are consistently at the same high level, the ratios are in excess of 1.000. This can only occur because of in-migration. Because no evidence exists to indicate that families with pupils at the Grade 7 level migrate into New York State at exceptionally high levels, the presumption is that the survival ratios at Grade 7 exceeded 1.00 because of an influx of private school students within the State and not from without the State. Yet an examination of the nonpublic Grade 7 and Grade 6 survival ratios shows no significant drop. Another possible explanation comes to mind. There is a reservoir of ungraded handicapped both in the public and nonpublic sectors. Both show rather large drops in special education enrollments at the secondary levels. Thus, a possible explanation is a surge of pupil enrollments in a graded structure public school environment from elementary special education ungraded private and public curricula.

Figure 10.8 depicts Grade 8 and Grade 9 public school survival ratios. Grade 8 survival ratios represent no surprises and stablize at about .97. Thus, the projected .9750

survival ratios for future years appears reasonable. Grade 9 contains no surprises, also. This is so even though the survival ratios are in excess of 1,000, remaining in the neighborhood of about 1.14. The reason for this is primarily due to the influx of nonpublic students into the public schools. An analysis of nonpublic Grade 8 and Grade 9 survival ratios contains the evidence for this statement. For example, the survival ratio for Grade 7 in nonpublic schools is about .95 drops to about .66 in Grade 8 and rises to about .93 in Grade 9. Also, it is common knowledge that the private schools are organized principally on the K-8, 9-12 plan. Thus, students graduating from private schools, particularly Roman Catholic, do select public secondary schools in sufficient numbers to cause a drop in the Grade 8 nonpublic survival ratio of about .29 from Grade 7.

Figures 10.9 and 10.10 show survival ratios for Grades 10.11, and 12 and as well as for graduates. Survival ratios for Grade 10 almost approach 1.000. The initial temtation is to presume that few students drop out of school from Grade 9 to Grade 10. However, it must be remembered that the survival ratios for Grade 9 are about 1.16. Therefore, the drop in survival ratios from Grade 9 to Grade 10 represents, on the average, a 16 percent drop in student enrollment. This compares with a 12 percent drop on the average from Grade 10 to Grade 11. This squares with prima facie experience of secondary school personnel who have experienced the phenomenon of school dropouts.

Public School
Graduates

Figure 10.10 portrays survival ratios for public

school graduates in New York State. Table 10.9 contains the numerical data on the actual and projected numbers of public school graduates. In 1965, public school graduates numbered 171,147. The number trended upward reaching 213,127 in 1975. This upward trend is projected to continue until about 1981 when an estimated number of 223,297 students is projected to graduate. The projected trend line is downward for the ensuing years reaching an estimated number of 154,629 public school graduates in 1990.

Graduate survival ratios, that is, the ratio of students who graduate in a given school year compared to that year's fall Grade 12 enrollment, tended over the years to average out at about .94. This is the projected ratio used for the ensuing years to 1990. It seems reasonable if no factors on the present or future horizons will appear to dramatically alter this survival ratio. In fact, the ratio could even drop slightly if the emerging trend to enter the world of work sooner on the part of youth accelerates.

NONPUBLIC SCHOOL ENROLLMENTS IN NEW YORK STATE

Tables 10.6, 10.7, and 10.8 contain data on nonpublic school enrollments in New York State on grade-by-grade basis. Figure 10.11 graphically portrays total nonpublic school enrollments (K-12), elementary school enrollments (Grades K-6), and secondary school enrollments (Grades 7-12).

Total nonpublic school enrollment in New York State was 891,146 in 1966, progressively decreasing on the aver-

TABLE 10.6

TREND DATA ON RATIOS OF KINDERGARTEN AND GRADE 1 NONPUBLIC ENROLLMENTS TO LIVE BIRTHS, NEW YORK STATE

CALENDAR YEAR OF BIRTHS	RESIDENT SCHOOL		KINDERGARTEN DATA		GRADE 1 DATA	
	LIVE BIRTHS	YEAR (OCTOBER)	PUPILS ENROLLED	RATIO TO BIRTHS 5 YEARS PREVIOUS	PUPILS ENROLLED	RATIO TO BIRTHS 6 YEARS PREVIOUS
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1959	360,662	1965				
1960	359,222	1966	32,139		88,367	
1961	362,247	1967	30,000	.0848	86,001	.2375
1962	353,835	1968	30,787	.0865	81,119	.2293
1963	355,752	1969	28,757	.0818	76,307	.2145
1964	351,390	1970	26,039	.0776	68,931	.1962
1965	335,576	1971	26,597	.0829	63,400	.1889
1966	320,699	1972	26,257	.0852	57,622	.1797
1967	308,047	1973	26,953	.0893	52,709	.1711
1968	301,697	1974	28,470	.0919	49,984	.1657
1969	309,794	1975	12,892	.1037	49,872	.1610
1970	317,153	1976	13,026	.1162	48,324	.1524
1971	284,219	1977	13,160	.1309	46,776	.1646
1972	253,325	1978	13,294	.1395	45,228	.1785
1973	238,667	1979	33,428	.1398	43,680	.1840
1974	239,166	1980	33,562	.1423	42,132	.1762
1975	235,803	1981	33,696	.1364	42,406	.1798
1976	246,967	1982	33,830	.1301	42,680	.1728
1977	259,935	1983	33,964	.1245	42,954	.1652
1978	272,903	1984	34,098	.1192	43,228	.1584
1979	285,869	1985	34,232	.1179	43,502	.1522
1980	290,250	1986*	34,200	.1157	43,650	.1504
1981	295,687	1987*	34,450	.1148	43,800	.1481
1982	300,125	1988*	34,625	.1132	43,990	.1466
1983	305,862	1989*	34,700	.1113	44,000	.1439
1984	311,806	1990	34,895	.1115	44,127	.1115

NOTE: These figures do not include Pre-K, Ungraded and Post Graduate.

SOURCE: Based on data provided by the New York State Education Department, Information Center on Education.
*SOURCE: Figures estimated by Section 842 Staff.

TABLE 10.7

TREND DATA ON RATIOS GRADE 2 TO 6 NONPUBLIC PUPIL ENROLLMENTS TO GRADE 1 TO 5 NONPUBLIC PUPIL ENROLLMENTS OF THE PREVIOUS YEAR, NEW YORK STATE

SCHOOL YEAR (OCTOBER)	GRADE 2 DATA		GRADE 3 DATA		GRADE 4 DATA		GRADE 5 DATA		GRADE 6 DATA	
	PUPILS ENROLLED	RATIO TO GRADE 1 PREVIOUS YEAR	PUPILS ENROLLED	RATIO TO GRADE 2 PREVIOUS YEAR	PUPILS ENROLLED	RATIO TO GRADE 3 PREVIOUS YEAR	PUPILS ENROLLED	RATIO TO GRADE 4 PREVIOUS YEAR	PUPILS ENROLLED	RATIO TO GRADE 5 PREVIOUS YEAR
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1965										
1966	87,471		87,785		86,096		82,915		80,726	
1967	84,846	.9601	85,002	.9717	84,846	.9965	83,306	.9675	80,936	.9761
1968	82,230	.9562	82,131	.9680	82,345	.9687	81,907	.9654	80,733	.9691
1969	76,683	.9453	78,918	.9597	78,743	.9588	78,956	.9588	79,190	.9668
1970	70,022	.9176	71,131	.9276	73,038	.9255	73,085	.9281	73,662	.9330
1971	65,769	.9541	67,154	.9590	68,132	.9578	70,054	.9591	70,483	.9644
1972	59,814	.9434	62,720	.9536	63,826	.9504	64,876	.9522	67,278	.9627
1973	55,051	.9554	57,425	.9601	59,718	.9521	60,865	.9536	62,438	.9624
1974	50,973	.9671	53,422	.9704	55,534	.9671	57,526	.9633	58,666	.9639
1975	49,030	.9809	50,115	.9832	51,990	.9732	54,284	.9775	56,076	.9748
1976	48,875	.9800	48,540	.9900	49,113	.9800	50,950	.9800	53,198	.9800
1977	47,358	.9800	48,386	.9900	47,569	.9800	48,130	.9800	49,931	.9800
1978	45,840	.9800	46,884	.9900	47,419	.9800	46,618	.9800	47,168	.9800
1979	44,323	.9800	45,382	.9900	45,947	.9800	46,470	.9800	45,685	.9800
1980	42,806	.9800	43,880	.9900	44,474		45,028	.9800	45,540	.9800
1981	41,289	.9800	42,378	.9900	43,002	.9800	43,585	.9800	44,127	.9800
1982	41,558	.9800	40,876	.9900	41,530	.9800	42,142	.9800	42,713	.9800
1983	41,826	.9800	41,142	.9900	40,059	.9800	40,700	.9800	41,299	.9800
1984	42,095	.9800	41,407	.9900	40,320	.9800	39,257	.9800	39,885	.9800
1985	42,363	.9800	41,674	.9900	40,580	.9800	39,513	.9800	38,472	.9800
1986*	42,631	.9800	41,939	.9900	40,840	.9800	39,768	.9800	38,723	.9800
1987*	42,924	.9800	42,204	.9900	41,100	.9800	40,023	.9800	38,972	.9800
1988*	43,110	.9800	42,495	.9900	41,360	.9800	40,278	.9800	39,222	.9800
1989*	43,120	.9800	42,678	.9900	41,400	.9742	40,533	.9800	39,472	.9800
1990	43,122	.9800	42,569	.9872	41,599	.9788	40,650	.9812	39,724	.9800

NOTE: These figures do not include Pre-K, Ungraded and Post Graduate.

SOURCE: Based on data provided by the New York State Education Department, Information Center on Education.
*SOURCE: Figures estimated by Section 842 Staff.

TABLE 10.8

TREND DATA ON RATIOS GRADE 7 TO 12 NONPUBLIC PUPIL ENROLLMENTS TO GRADES 6 TO 11 NONPUBLIC PUPIL ENROLLMENTS OF THE PREVIOUS YEAR, NEW YORK STATE

SCHOOL YEAR (OCTOBER)	GRADE 7 DATA PUPILS ENROLLED	GRADE 7 DATA RATIO TO GRADE 6 PREVIOUS YEAR	GRADE 8 DATA PUPILS ENROLLED	GRADE 8 DATA RATIO TO GRADE 7 PREVIOUS YEAR	GRADE 9 DATA PUPILS ENROLLED	GRADE 9 DATA RATIO TO GRADE 8 PREVIOUS YEAR	GRADE 10 DATA PUPILS ENROLLED	GRADE 10 DATA RATIO TO GRADE 9 PREVIOUS YEAR	GRADE 11 DATA PUPILS ENROLLED	GRADE 11 DATA RATIO TO GRADE 10 PREVIOUS YEAR	GRADE 12 DATA PUPILS ENROLLED	GRADE 12 DATA RATIO TO GRADE 11 PREVIOUS YEAR
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1965												
1966	78,612		74,565		53,670		46,317		44,263		43,110	
1967	77,605	.9613	75,167	.9561	52,955	.7101	50,295	.9376	44,284	.9561	43,001	.9714
1968	76,748	.9483	74,298	.9574	52,366	.6967	49,686	.9383	47,933	.9530	43,262	.9770
1969	76,190	.9437	72,357	.9428	50,520	.6800	47,793	.9127	46,054	.9269	45,349	.9461
1970	72,928	.9209	71,244	.9351	47,728	.6596	44,642	.8837	43,118	.9022	42,667	.9265
1971	70,537	.9576	69,752	.9565	47,855	.6717	44,070	.9234	41,855	.9376	40,749	.9451
1972	67,226	.9538	67,039	.9504	46,181	.6621	43,941	.9182	41,359	.9385	39,506	.9439
1973	64,199	.9542	63,575	.9457	44,854	.6691	41,992	.9093	40,526	.9223	38,002	.9188
1974	59,968	.9604	61,450	.9572	41,691	.6558	40,365	.8999	38,131	.9081	37,079	.9149
1975	57,220	.9754	57,357	.9565	40,593	.6606	38,361	.9201	37,232	.9224	35,539	.9320
1976	54,955	.9800	54,931	.9600	38,429	.6700	37,752	.9300	35,676	.9300	34,998	.9400
1977	52,134	.9800	52,756	.9600	36,804	.6700	35,739	.9300	35,109	.9300	33,535	.9400
1978	48,933	.9800	50,049	.9600	35,347	.6700	34,228	.9300	33,237	.9300	33,002	.9400
1979	46,225	.9800	46,975	.9600	33,533	.6700	32,873	.9300	31,832	.9300	31,243	.9400
1980	44,772	.9800	44,376	.9600	31,473	.6700	31,186	.9300	30,571	.9300	29,922	.9400
1981	44,630	.9800	42,981	.9600	29,732	.6700	29,270	.9300	29,003	.9300	28,737	.9400
1982	43,245	.9800	42,845	.9600	28,797	.6700	27,650	.9300	27,221	.9300	27,262	.9400
1983	41,859	.9800	41,515	.9600	28,706	.6700	26,781	.9300	25,715	.9300	25,588	.9400
1984	40,473	.9800	40,184	.9600	27,815	.6700	26,697	.9300	24,907	.9300	24,172	.9400
1985	39,088	.9800	38,854	.9600	26,923	.6700	25,868	.9300	24,828	.9300	23,412	.9400
1986 *	37,703	.9800	37,524	.9600	26,032	.6700	25,038	.9300	24,057	.9300	23,338	.9400
1987 *	37,949	.9800	36,195	.9600	25,142	.6700	24,210	.9300	23,285	.9300	22,613	.9400
1988 *	38,192	.9800	36,431	.9600	24,251	.6700	23,382	.9300	22,515	.9300	21,888	.9400
1989 *	38,438	.9800	36,664	.9600	24,409	.6700	22,553	.9300	21,745	.9300	21,164	.9400
1990	38,684	.9800	36,901	.9600	24,566	.6700	22,700	.9300	20,974	.9300	20,440	.9400

NOTE: These figures do not include Pre-K, Ungraded and P.G.

SOURCE: Based on data provided by the New York State Education Department, Information Center on Education.
*SOURCE: Figures estimated by Section 842 Staff.

TABLE 10,9

TREND DATA ON SENIOR HIGH SCHOOL GRADUATES BOTH PUBLIC AND PRIVATE, NEW YORK STATE

SCHOOL YEAR (OCTOBER)	PUBLIC SCHOOL DATA GRADE 12 ENROLLMENT	PUBLIC SCHOOL DATA NUMBER OF GRADUATES	RATIO OF GRADUATES TO GRADE 12 ENROLLMENT	NONPUBLIC SCHOOL DATA GRADE 12 ENROLLMENT	NONPUBLIC SCHOOL DATA NUMBER OF GRADUATES	RATIO OF GRADUATES TO GRADE 12 ENROLLMENT	TOTAL GRADUATES NEW YORK STATE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1965	180,463	171,147	.9484		39,109		210,656
1966	188,715	178,794	.9472	43,110	43,235	1.0029	222,029
1967	191,902	182,892	.9530	43,001	39,881	.9274	222,773
1968	199,908	182,758	.9142	43,262	40,539	.9371	240,447
1969	202,604	190,512	.9403	45,349	43,125	.9510	233,637
1970	204,516	192,807	.9427	42,667	41,521	.9731	234,328
1971	212,968	199,771	.9380	40,749	40,043	.9827	239,814
1972	217,722	204,037	.9376	39,506	38,957	.9861	242,994
1973	219,560	207,413	.9447	38,002	37,475	.9861	244,888
1974	224,838	210,780	.9375	37,079	37,340	1.0070	248,120
1975	226,731	213,127	.9399	35,539	35,535	.9999	248,662
1976	228,847	215,116	.9399	34,998	34,995	.9999	250,111
1977	234,417	220,352	.9400	33,535	33,532	.9999	253,884
1978	237,616	223,359	.9399	33,002	32,999	.9999	256,358
1979	236,899	222,685	.9399	31,243	31,240	.9999	253,925
1980	237,999	223,719	.9399	29,922	29,919	.9999	253,638
1981	237,550	223,297	.9400	28,737	28,734	.9999	252,031
1982	228,024	214,343	.9400	27,262	27,259	.9999	241,602
1983	218,768	205,642	.9400	25,588	25,585	.9999	231,227
1984	210,657	198,019	.9400	24,172	24,170	.9999	222,189
1985	207,210	194,777	.9399	23,412	23,410	.9999	218,187
1986*	212,787	199,999	.9399	23,338	23,336	.9999	223,335
1987*	217,800	204,710	.9399	22,613	22,611	.9999	227,321
1988*	195,707	183,945	.9399	21,888	21,886	.9999	205,831
1989*	174,613	164,119	.9399	21,164	21,162	.9999	185,281
1990	164,516	154,629	.9399	20,440	20,438	.9999	175,067

SOURCE: Based on data provided by the New York State Education Department, Information Center on Education.

*SOURCE: Figures estimated by Section 842 Staff.

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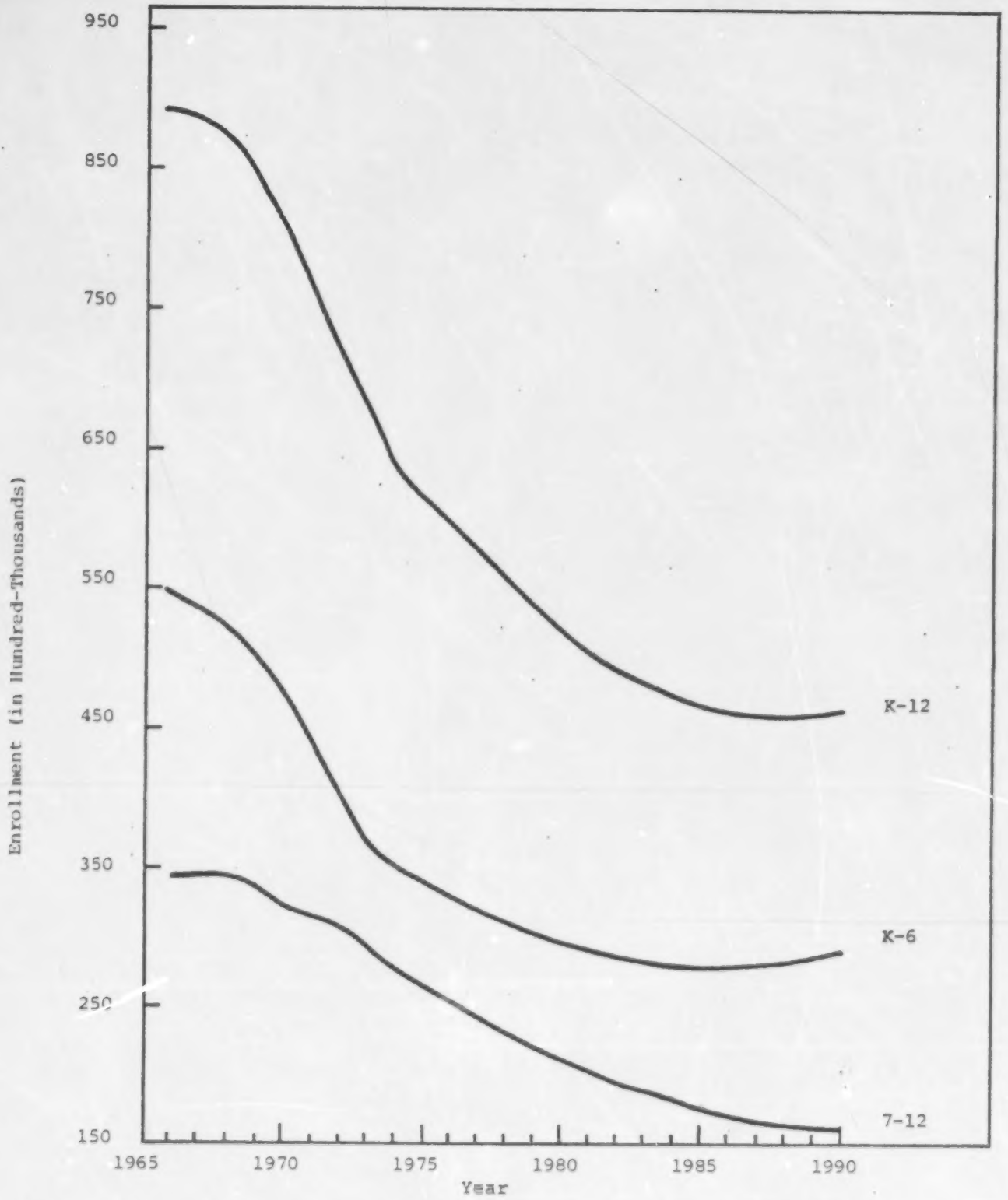

Figure 10.11. Actual Nonpublic Pupil Enrollments for New York State From 1966 to 1975 and Nonpublic Pupil Enrollment Projections for New York State from 1976 to 1990, by Grades Kindergarten to 6, Grades 7-12, and Grades K-12.

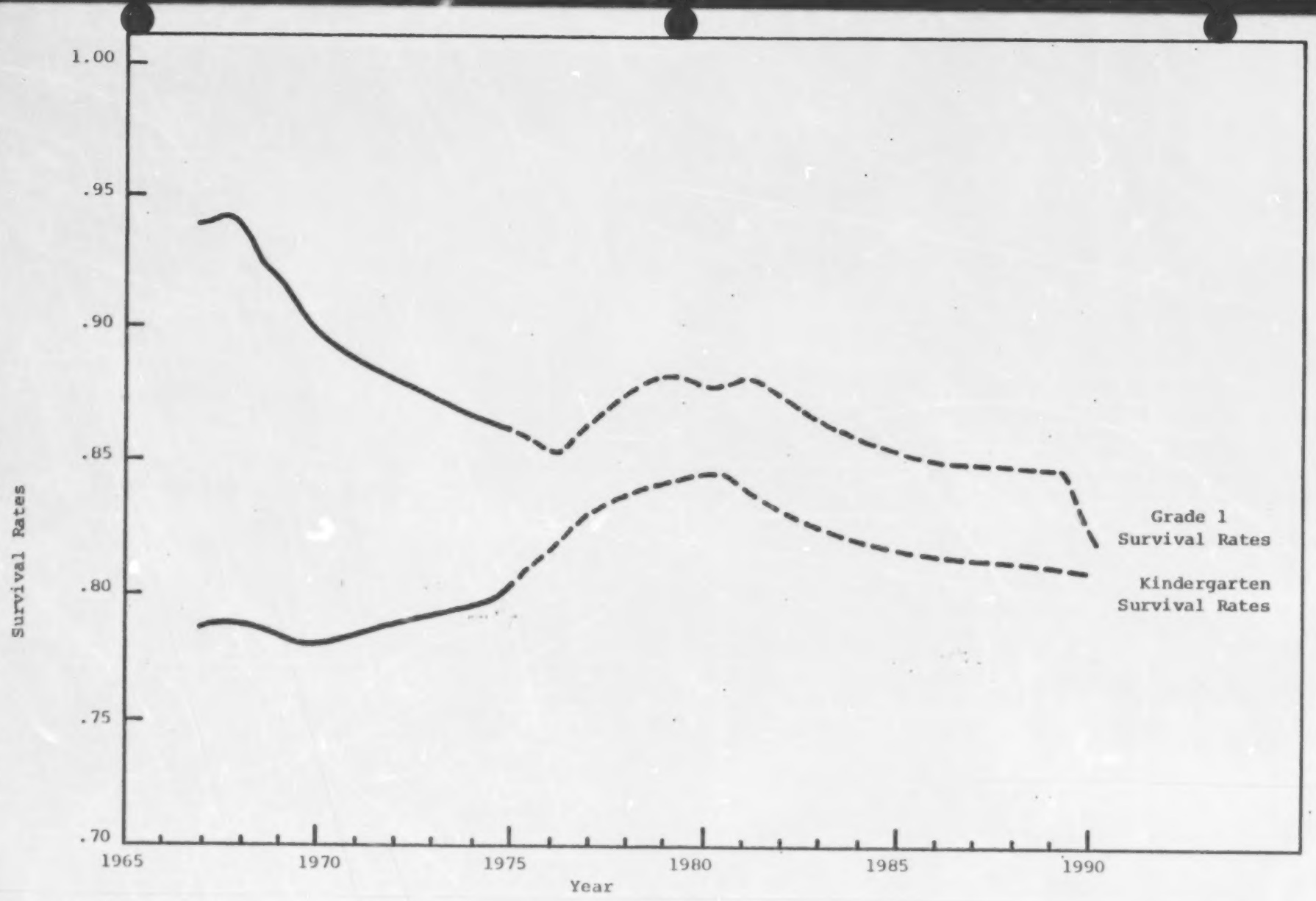

Figure 10.12. Actual and Projected Survival Ratios of Kindergarten Enrollment to Live Births and First Grade Enrollment to Kindergarten in New York State Nonpublic Elementary and Secondary Schools, 1965 to 1990.

age to 620,356 in 1975. This trend is projected to continue reaching an estimated enrollment of 461,888 in 1990. The projected trends for both the nonpublic elementary (Grades K-6) and secondary (Grades 7-12) enrollments parallel that for total nonpublic school (Grades K-12) enrollments. The predictive coefficent tends to be on the slightly conservative side for nonpublic school enrollments, particularly those survival ratios projected for kindergarten and Grade 1 nonpublic enrollments. Thus, smaller cohorts are projected for nonpublic kindergarten and Grade 1 than would be the case if kindergarten and Grade 1 survival ratios were not projected downward. The effect of smaller rather than larger cohorts over the ensuing years is to reduce subsequent grade enrollments even though in some instances survival ratios for a particular grade or grades are increased slightly. Thus, the projected enrollments for nonpublic schools should be viewed as conservative.

Survival Ratios
Nonpublic Schools

Tables 10.6, 10.7, and 10.8 contain numerical data on grade-by-grade survival ratios, both actual and projected, for nonpublic school enrollments in New York State. These survival ratios are graphically depicted in Figures 10.12, 10.13, 10.14, 10.15, 10.16, 10.17, and 10.18.

Survival ratios for kindergarten to live births for nonpublic school enrollments trended upward on the average from about .08 to .14. The projected survival ratios for kindergarten trend downward. As indicated earlier, these ratios appear

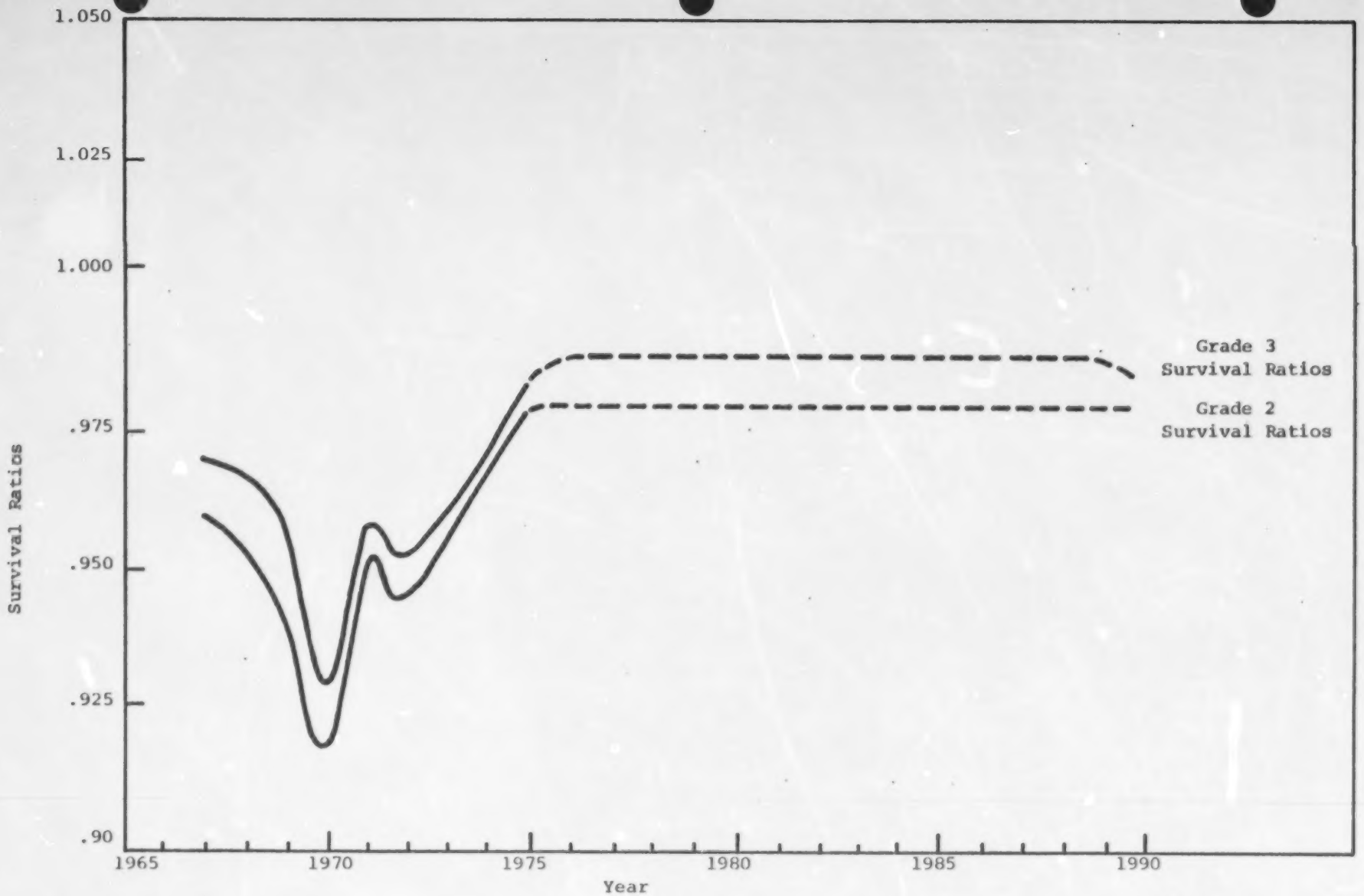

Figure 10.13. Actual and Projected Survival Ratios of Grade 2 to Grade 1 Previous Year's Enrollments and Grade 3 to Grade 2 Previous Year's Enrollments in New York State Non-Public Elementary Schools, 1965 to 1990.

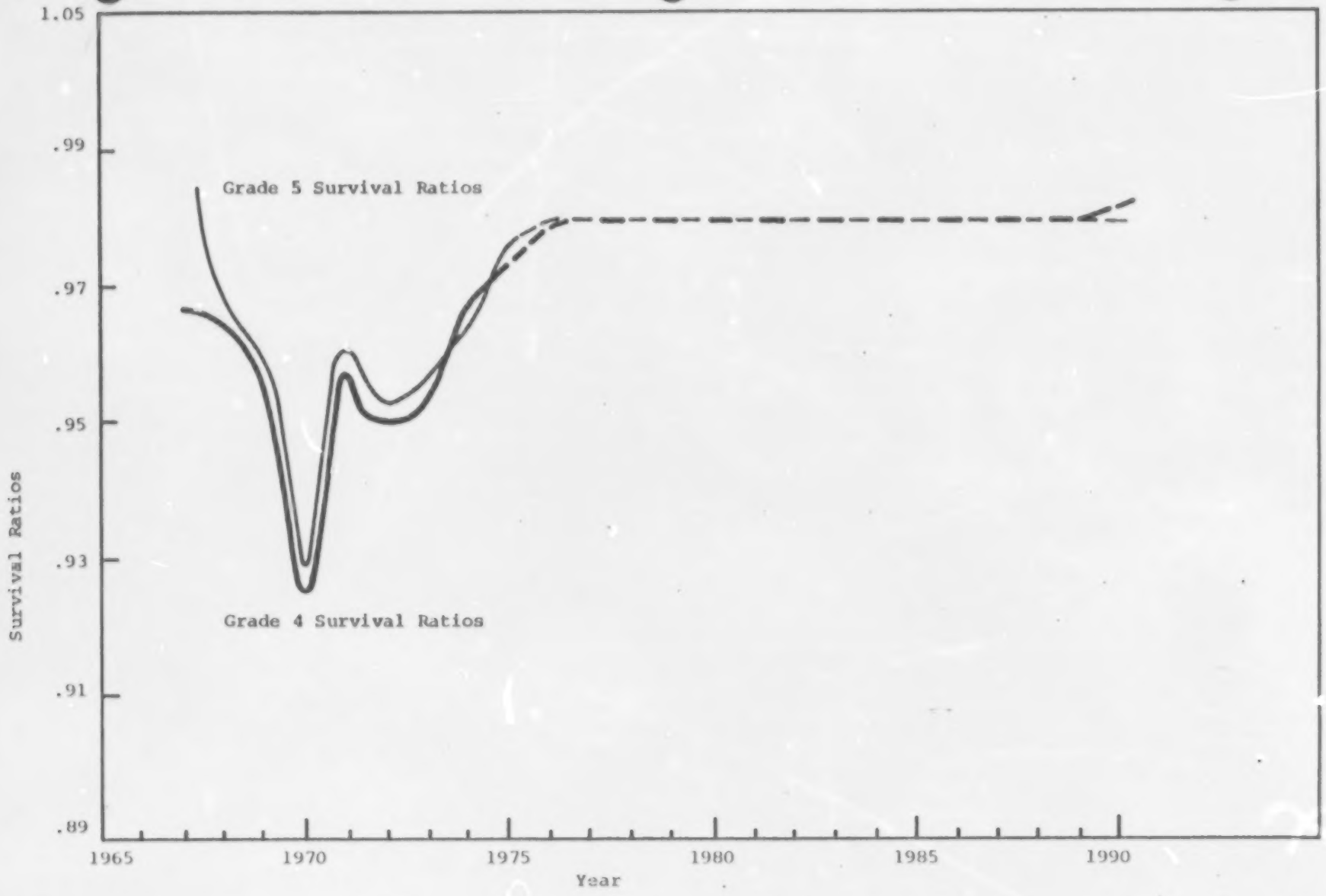

Figure 10.14. Actual and Projected Survival Ratios of Grade 4 to Grade 3 Previous Year's Enrollments and Grade 5 to Grade 4 Previous Year's Enrollments in New York State Nonpublic Elementary and Secondary Schools, 1965 to 1990.

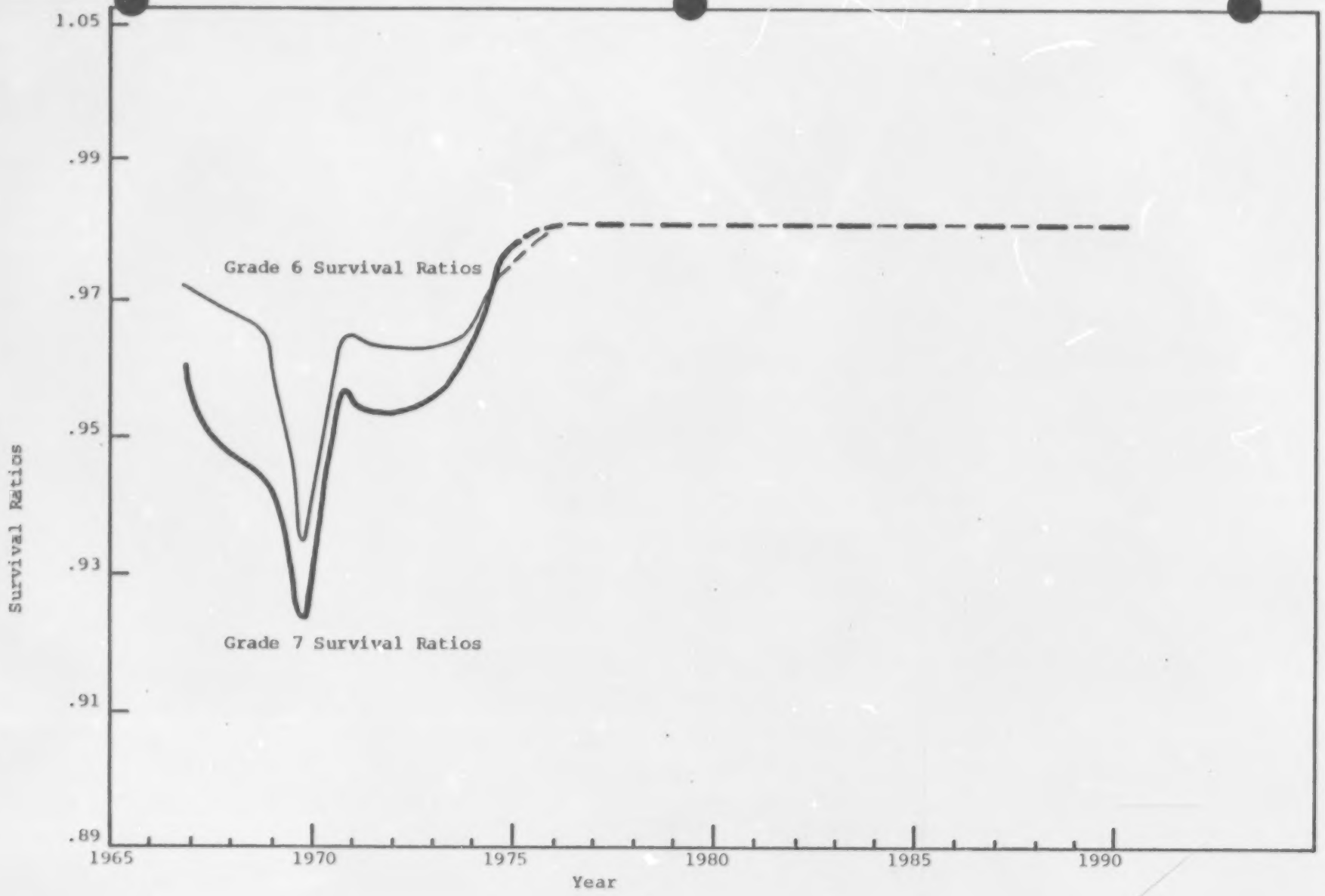

Figure 10.15. Actual and Projected Survival Ratios of Grade 6 to Grade 5 Previous Year's Enrollments and Grade 7 to Grade 6 Previous Year's Enrollments in New York State Nonpublic Elementary and Secondary Schools, 1965 to 1990.

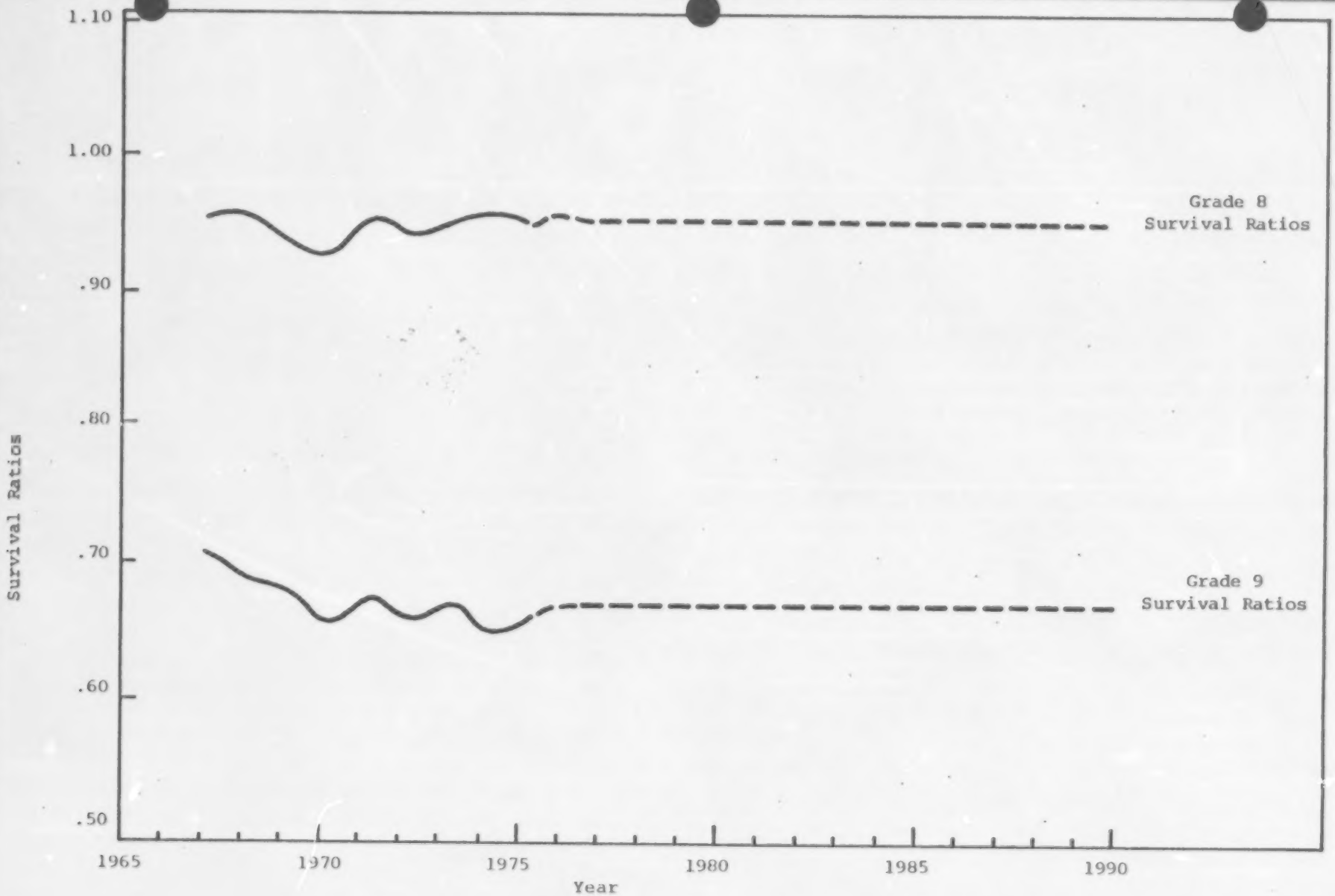

Figure 10.16. Actual and Projected Survival Ratios of Grade 8 to Grade 7 Previous Year's Enrollments and Grade 9 to Grade 8 Previous Year's Enrollments in New York State Nonpublic Elementary and Secondary Schools, 1965 to 1990.

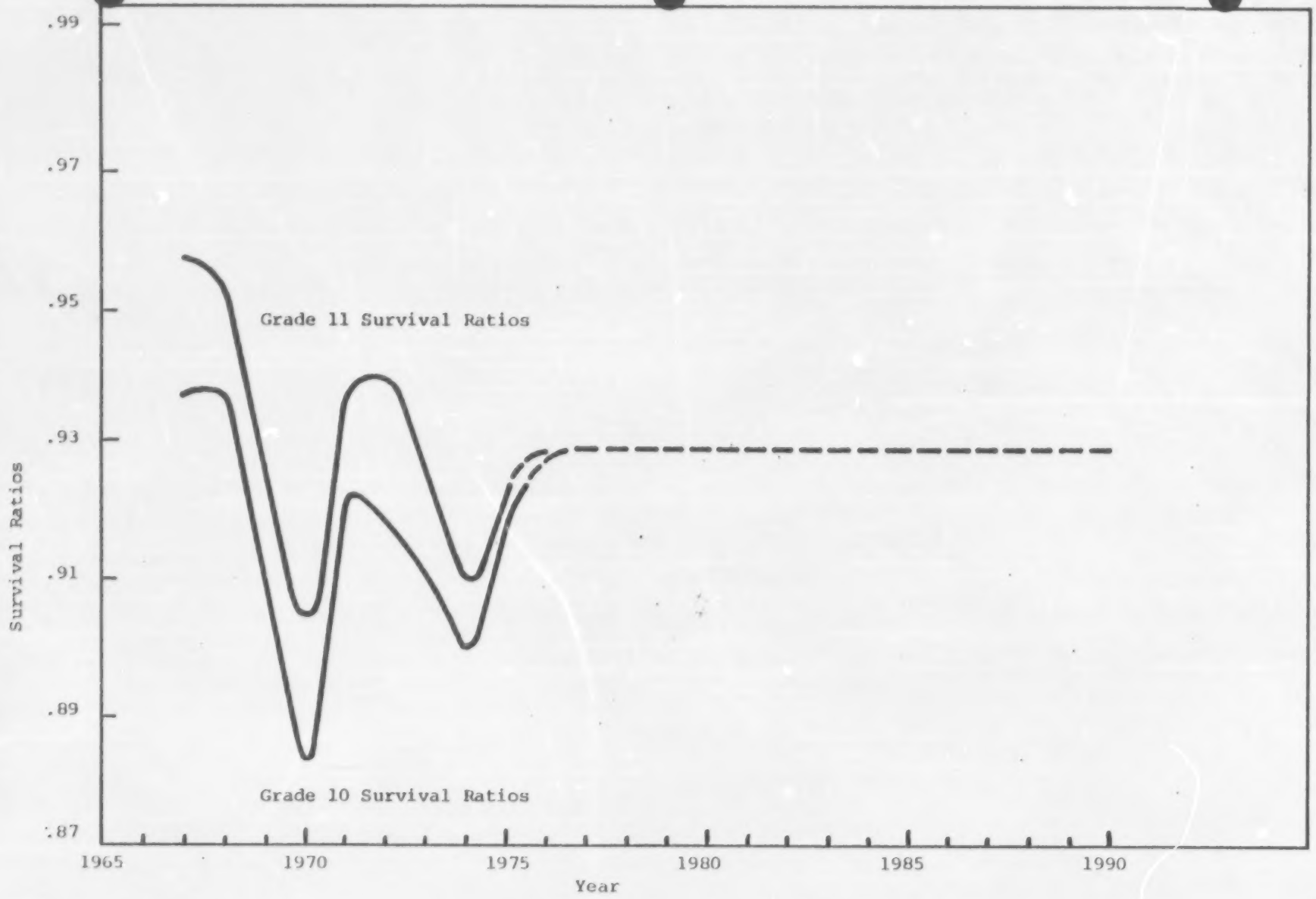

Figure 10.17. Actual and Projected Survival Ratios of Grade 10 to Grade 9 Previous Year's Enrollments and Grade 11 to Grade 10 Previous Year's Enrollments in New York State Nonpublic Elementary and Secondary Schools, 1965 to 1990.

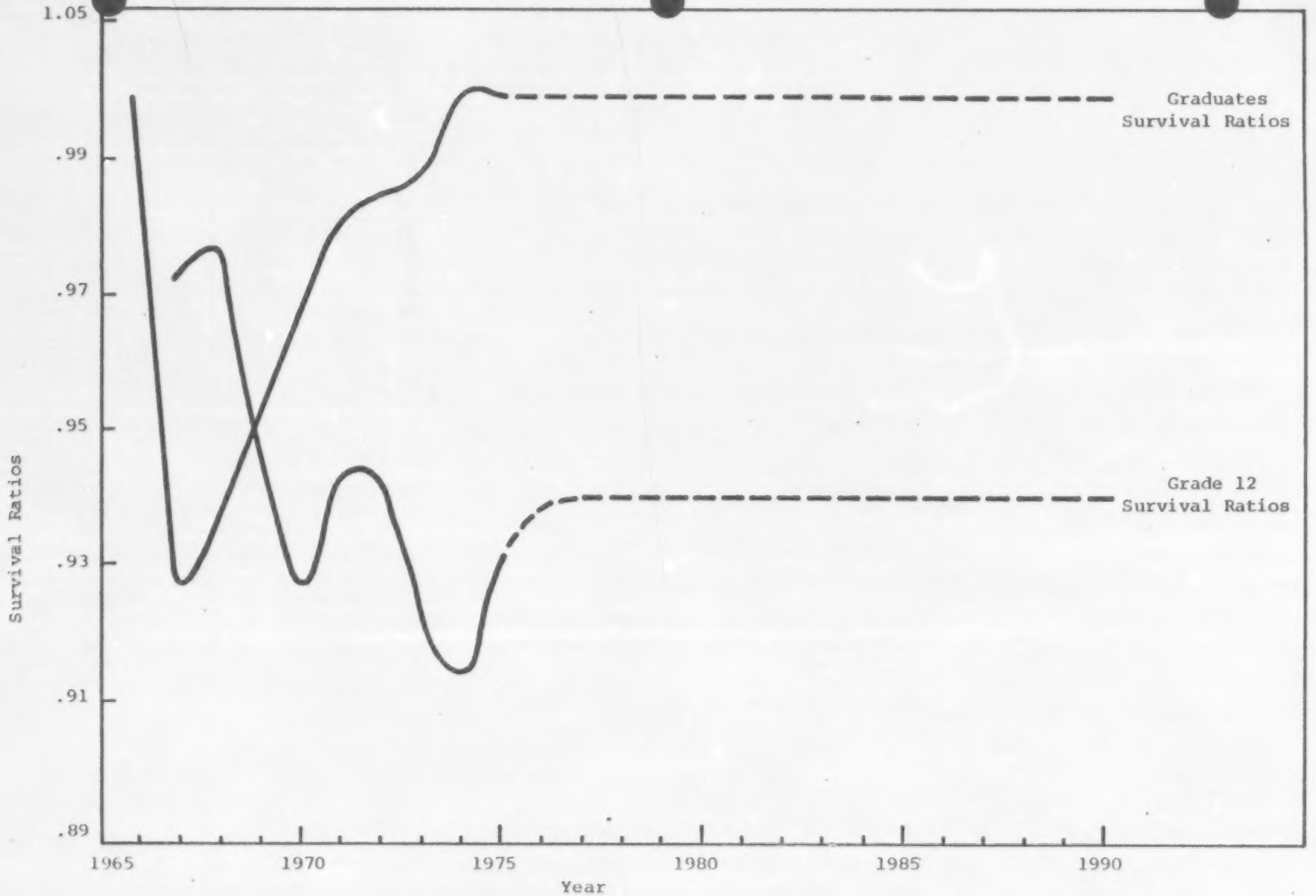

Figure 10.18. Actual and Projected Survival Ratios of Grade 12 to Grade 11 Previous Year's Enrollments and Graduates to Grade 12 Previous Year's Enrollments in New York State Nonpublic Elementary and Secondary Schools, 1965 to 1990.

to be very conservative. Grade 1 survival ratios tended to trend downward from about .24 in 1967 to about .15 in 1976. Each year thereafter the survival ratios were projected downward to an estimated .1115 in 1990. Figure 10.12 portrays survival ratio graphs for kindergarten and Grade 1 nonpublic enrollments.

Survival ratios for Grades 2, 3, 4, 5, 6, 7, and 8 are in the high .90's at about .96-.97 values. Projected survival ratios for these same grades are maintained at slightly higher levels. These ratios appear reasonable barring some dramatic developments which could cause either great increases or decreases in nonpublic school enrollments. None is expected over the years covered by this study. Figures 10.13, 10.14, 10.15, and 10.16 depict graphically actual and projected survival ratios for nonpublic school enrollments for Grades 2, 3, 4, 5, 6, 7, and 8.

Grade 9 nonpublic school enrollment survival ratios should be discussed not because the phenonmenon is unique to New York State, the same situation prevails in other states, but because it points out so vividly, statistically, the phenomenon of nonpublic school students shifting to public high schools from nonpublic elementary schools organized on a Grade K-8 basis. For example, nonpublic survival ratios for Grade 8 average about .96 whereas the ratios for Grade 9 average about .67. The ratios for Grade 10 rise to an average of .92 to .93. This, of course, accounts for the increased survival ratios in public school enrollments at Grade 9 trending historical at about the 1.15 level. The net result is to swell Grade 9 public school enrollments and

require more teachers, instructional equipment and supplies, and building space at the secondary school level (particularly in the junior high schools in systems so organized).

Nonpublic school enrollment survival ratios for Grades 10, 11 and 12 tend to average about .93. Figures 10.17 and 10.18 display the actual and projected survival ratios for these grades.

Nonpublic School Graduates

Table 10.9 contains the numerical data on nonpublic school graduates and Figure 10.18 the graphic display of the nonpublic school graduates survival ratios. As to be expected, survival ratios for nonpublic school graduates is higher on average than those for public school graduates. In 1965, nonpublic schools graduates a total of 39,109 students, reaching a high of 43,125 graduates in 1969 to 35,535 in 1975. The projected trend is downward for the ensuing years, reflecting lower nonpublic school enrollments rather than decreasing survival ratios.

SPECIAL EDUCATION PUPIL ENROLLMENTS

Special Education enrollments as defined by the term "ungraded handicapped" refers only to those pupils who possess the following handicaps and are instructed in special classes: Mentally Handicapped -- educable retarded, and trainable retarded; Emotionally Disturbed; Speech Impaired -- severely speech impaired, other speech impaired; Hearing Impaired -- deaf, hard of hearing; Visually Impaired -- legally blind, partial sight,

TABLE 10.10

TREND DATA ON SPECIAL EDUCATION PUBLIC PUPIL ENROLLMENTS, NEW YORK STATE

SCHOOL YEAR (OCTOBER)	TOTAL PUBLIC ELEMENTARY SCHOOL ENROLLMENT K-6	PUBLIC ELEMENTARY SPECIAL EDUCATION PUPILS ENROLLED	RATIO OF SPECIAL EDUCATION PUPILS ELEMENTARY TO TOTAL ELEMENTARY PUPILS ENROLLED	TOTAL PUBLIC SECONDARY SCHOOL ENROLLMENT 7-12**	PUBLIC SECONDARY SPECIAL EDUCATION PUPILS ENROLLED	RATIO OF SPECIAL EDUCATION SECONDARY PUPILS TO TOTAL SECONDARY PUPILS ENROLLED	TOTAL NEW YORK STATE*** PUBLIC ENROLLMENT	TOTAL SPECIAL EDUCATION PUPILS	RATIO
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1965	1,796,357	27,427***	.015268	1,332,065	20,725***	.015558	3,176,574	48,152	.0152
1966	1,831,681	27,999***	.015285	1,364,851	24,348***	.017839	3,248,879	52,347	.0161
1967	1,865,266	28,497***	.015277	1,408,368	23,346***	.016576	3,325,477	51,843	.0156
1968	1,890,924	28,901***	.015284	1,452,737	24,851***	.017106	3,397,413	53,752	.0158
1969	1,904,040	29,080***	.015272	1,486,804	22,885***	.015392	3,442,809	51,965	.0151
1970	1,904,871	29,099***	.015276	1,531,717	23,558	.015380	3,489,245	52,657	.0151
1971	1,884,466	25,504	.013533	1,569,075	24,824	.015820	3,503,859	50,328	.0144
1972	1,836,245	29,299	.015955	1,586,621	22,228	.014009	3,474,392	51,527	.0148
1973	1,781,360	26,307	.014767	1,599,354	20,539	.012842	3,427,560	46,846	.0137
1974	1,739,014	30,978	.017813	1,607,457	24,187	.015046	3,401,636	55,165	.0162
1975	1,703,370	33,962	.019938	1,619,271	25,766	.015912	3,382,369	59,728	.0177
1976	1,658,552	35,396	.021341	1,632,893	28,656	.017549	3,355,497	64,052	.0191
1977	1,599,656	37,198	.023253	1,632,142	30,116	.018451	3,299,122	67,314	.0204
1978	1,538,871	38,399	.024952	1,615,093	31,518	.019514	3,223,821	69,857	.0217
1979	1,487,104	39,580	.026615	1,583,825	32,426	.020473	3,142,935	72,006	.0229
1980	1,434,538	40,735	.028395	1,547,481	32,979	.021311	3,055,733	73,714	.0241
1981	1,387,158	39,113	.028196	1,516,392	32,043	.021131	2,974,706	71,156	.0239
1982	1,344,526	36,913	.027454	1,493,286	32,100	.0211496	2,906,825	69,013	.0237
1983	1,336,524	36,160	.027055	1,458,137	31,446	.021565	2,862,267	67,606	.0236
1984	1,361,889	36,978	.027151	1,411,608	29,938	.021208	2,840,413	66,916	.0236
1985	1,402,793	37,812	.026954	1,357,954	28,688	.021125	2,827,247	66,500	.0235
1986*	1,446,342	37,905	.026207	1,303,315	28,643	.021977	2,816,207	66,548	.0236
1987*	1,497,128	37,728	.025200	1,239,749	28,510	.022996	2,803,115	66,238	.0236
1988*	1,542,202	37,631	.024400	1,187,623	28,436	.023943	2,795,892	66,067	.0236
1989*	1,582,277	37,957	.023988	1,171,157	28,682	.024490	2,820,073	66,639	.0236
1990	1,614,422	38,661	.023947	1,188,532	29,215	.024580	2,870,830	67,876	.0236

SOURCE: Based on data provided by the New York State Education Department, Information Center on Education.
*SOURCE: Figures estimated by Section 842 Staff.
**SOURCE: Includes Post Graduates and Ungraded students.
***SOURCE: Elementary and Secondary Enrollment estimates by Information Center on Education staff.

TABLE 10.11

TREND DATA NONPUBLIC SPECIAL EDUCATION PUPIL ENROLLMENTS, NEW YORK STATE

SCHOOL YEAR (OCTOBER)	TOTAL NONPUBLIC ELEMENTARY SCHOOL ENROLLMENTS	NONPUBLIC ELEMENTARY SPECIAL EDUCATION PUPILS ENROLLED K - 6	RATIO OF SPECIAL EDUCATION PUPILS TO TOTAL ELEMENTARY PUPILS ENROLLED	TOTAL NONPUBLIC SECONDARY SCHOOL ENROLLMENTS 7-12**	NONPUBLIC SECONDARY SPECIAL EDUCATION PUPILS ENROLLED 7 - 12	RATIO OF SPECIAL EDUCATION SECONDARY PUPILS TO TOTAL SECONDARY PUPILS ENROLLED	TOTAL NEW YORK STATE *** NONPUBLIC ENROLLMENT	TOTAL SPECIAL EDUCATION PUPILS	RATIO
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1965									
1966	545,499	3,824*	.007010	340,537	1,286*	.003776	891,146	5,110	
1967	534,703	4,190*	.007836	343,308	1,376*	.004008	878,645	5,466	.006220
1968	521,247	4,550*	.008729	344,293	1,476*	.004287	866,691	6,026	.006952
1969	497,554	3,472*	.006978	339,130	1,126*	.003320	836,780	4,598	.005494
1970	455,908	3,537*	.007758	322,327	1,369*	.004247	783,141	4,906	.006264
1971	431,589	4,979	.011536	314,818	1,927	.006120	747,300	6,906	.009241
1972	402,393	8,154	.020263	305,252	2,643	.008658	708,575	10,797	.015237
1973	375,159	7,668	.020439	293,148	2,578	.008794	669,151	10,246	.015311
1974	354,575	7,500	.021152	277,386	3,053	.011006	642,514	10,553	.016630
1975	344,259	7,583	.022027	265,313	3,201	.012064	620,356	10,784	.017383
1976	332,026	7,742*	.023317	256,741	3,268*	.012728	588,767	11,010	.018700
1977	321,310	7,944*	.024723	246,077	3,234*	.013142	567,387	11,178	.019700
1978	312,451	8,050*	.025764	234,796	3,278*	.013961	547,247	11,328	.020699
1979	304,915	8,136*	.026682	222,681	3,313*	.014877	527,596	11,449	.021700
1980	297,423	8,223*	.027647	212,300	3,348*	.015770	521,293	11,571	.022196
1981	290,483	7,983*	.027481	204,353	3,250*	.015903	506,069	11,233	.022196
1982	285,329	7,893*	.027662	197,020	3,056*	.015511	493,298	10,949	.022195
1983	281,944	7,616*	.027012	190,164	3,101*	.016317	482,825	10,717	.022196
1984	280,290	7,415*	.026454	184,248	3,130*	.016987	475,083	10,545	.022196
1985	280,336	7,331*	.026150	178,973	3,095*	.017293	469,735	10,426	.022195
1986*	281,751	7,334*	.026030	184,025	2,989*	.016242	465,776	10,333	.022184
1987*	283,473	7,412*	.026111	179,674	2,868*	.015962	463,147	10,280	.022195
1988*	285,080	7,670*	.026904	176,908	2,579*	.014578	461,988	10,249	.022184
1989*	285,903	7,656*	.026778	175,203	2,574*	.014691	461,106	10,230	.022185
1990	286,686	7,731*	.026966	174,502	2,506*	.014360	461,188	10,237	.022197

SOURCE: Based on data provided by the New York State Education Department, Information Center on Education.

*Total Special Education figures by grade as provided by the Information Center on Education were proportioned into K-6 and 7-12 figures by grade by the Section 842 staff. Years not marked with asterisk provided by the Information Center.

**Includes Post Graduate figure.

***Total enrollment figure does not include Pre-K. Total enrollment figure does include Ungraded and Post-Graduate figures.

and Other Physically Handicapped. Table 10.15 contains children who are handicapped physically, mentally, and emotionally whether or not they are in special education classes full time. Clearly, there are more children who are receiving special education services than those classified under ungraded handicapped.

Table 10.10 contains data on public school special education pupil enrollments both at the elementary and secondary school levels. Table 10.11 on the other hand, contains similar data except that it is for the nonpublic schools.

For purposes of projecting pupil enrollments in special education (ungraded handicapped enrollments) ratios of pupils enrolled in special education at both the elementary and secondary levels to total pupils enrolled (Grades K-12) were computed. Also, the ratios of secondary special education pupils to total secondary pupils enrolled (Grades 7-12) were computed as well as ratios of elementary special education pupils to total elementary pupils enrolled (Grades K-6).

Trends in Elementary Special Education Enrollments

In 1965, public elementary school enrollment in special education was 27,427 or about 1.52 percent of total elementary public school enrollment. One decade later the number reached 33,962 or 1.99 percent of total public elementary school enrollment in the State of New York. Figure 10.19 depicts the enrollment trend data for both public and nonpublic special education students at the elementary level. Figure 10.20 shows the survival ratios for both public and nonpublic elementary special

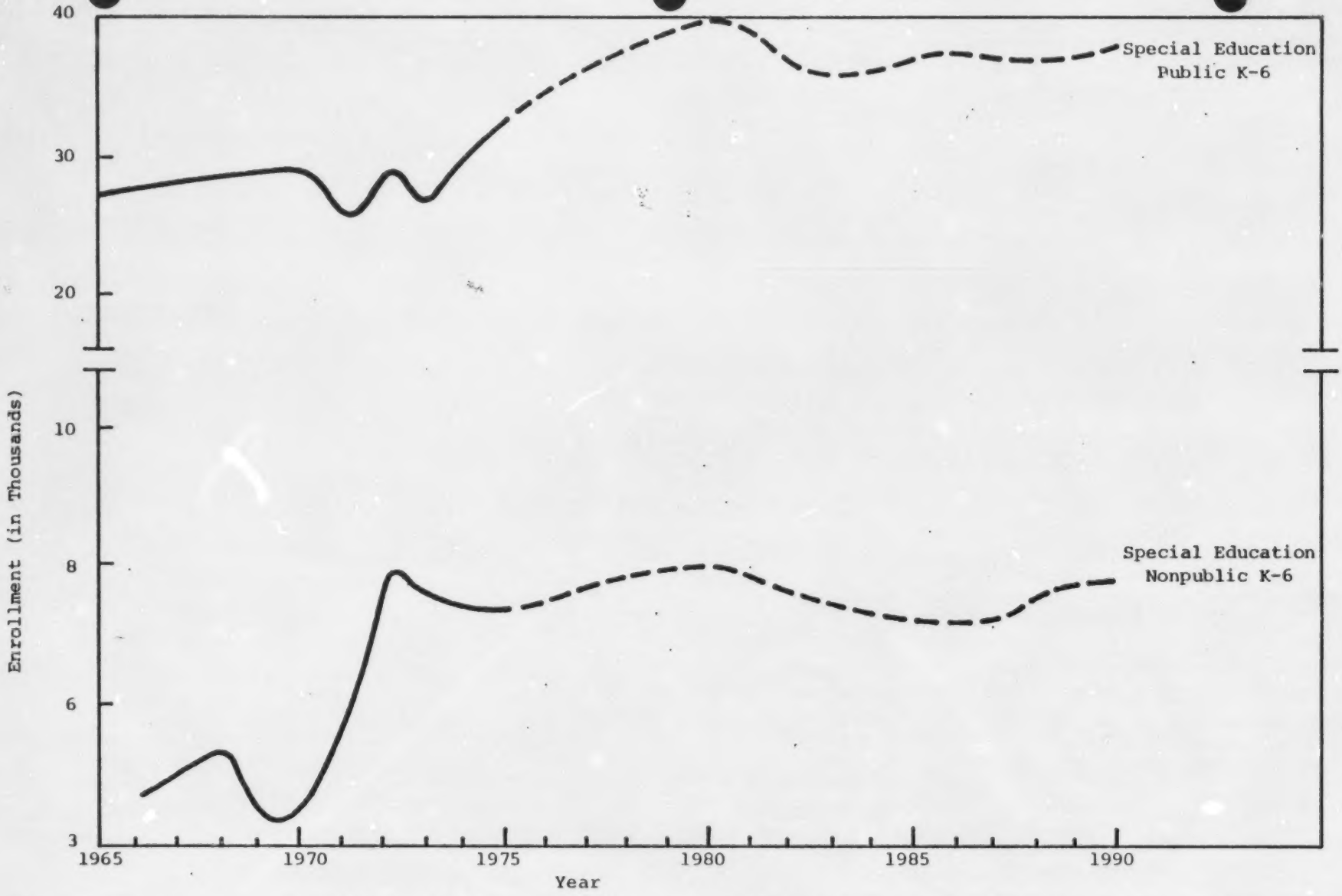

Figure 10.19. Actual Public and Nonpublic Elementary Special Education Enrollment for New York State from 1966 to 1975 and Projections for New York State from 1976 to 1990.

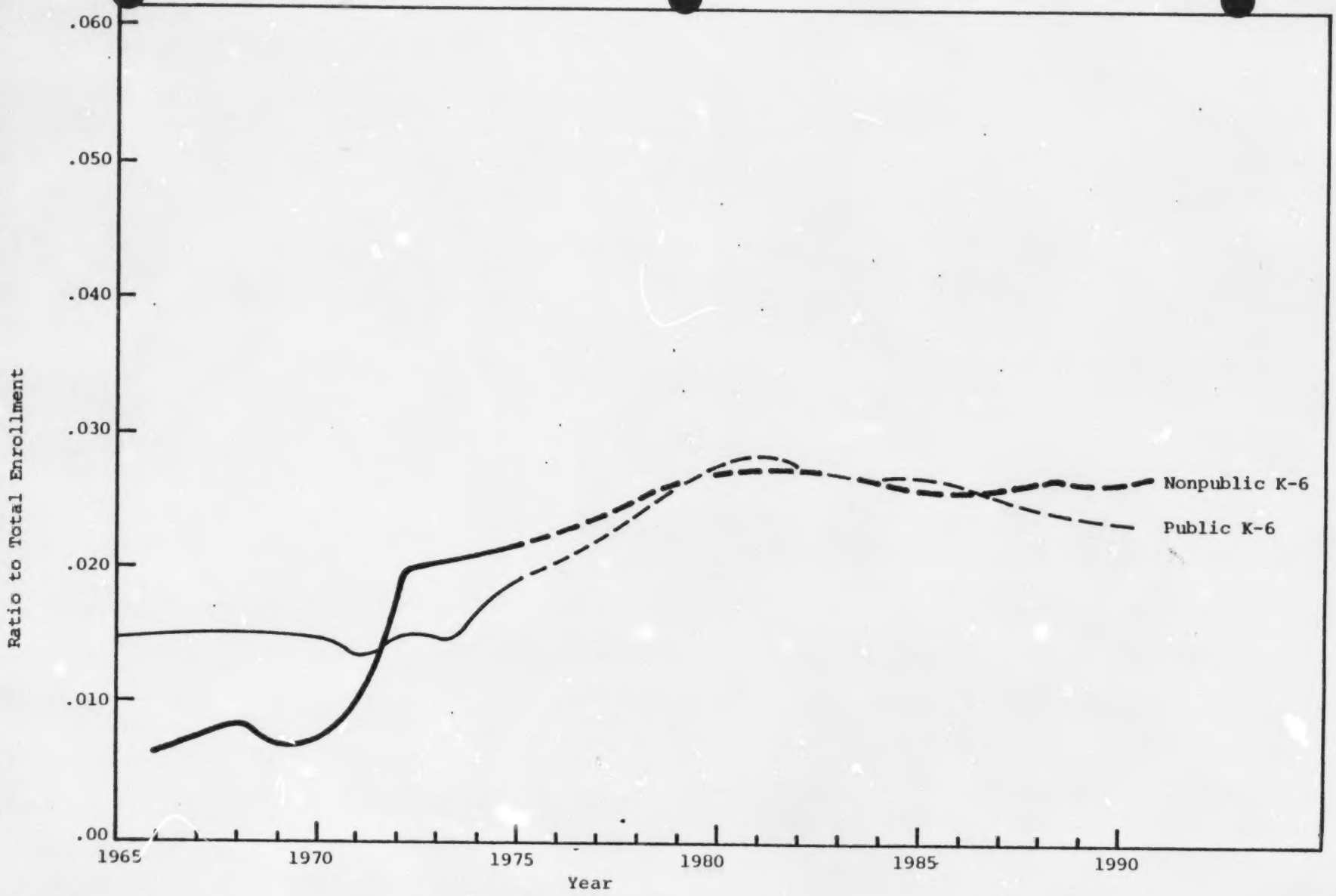

Figure 10.20. Actual and Projected Ratios of Public Elementary Special Education Pupils to Total Public Elementary Pupils Enrolled, and Nonpublic Elementary Special Education Pupils to Total Nonpublic Elementary Enrolled, 1965 to 1990.

education students.

The pattern for nonpublic elementary special education enrollments is similar to that of the one for public elementary special education enrollments. In 1966, nonpublic special enrollment was 3,824 or 0.70 percent of total nonpublic elementary special education enrollment. Almost one decade later in 1975, nonpublic elementary special education enrollment was 7,583 or 2.20 percent of total nonpublic elementary school enrollment.

In projecting special education public enrollments for the years ahead to 1990, ratios for both public and nonpublic elementary enrollments were increased slightly. Thus, the full effect of Federal legislation regarding special education programs for the handicapped was not included in these increased ratios. Several reasons may be cited at this time for considering these special education enrollments as conservative: (1) the feeling that the screening process identifying pupils as needing special remediation programs is rather thorough; (2) the precise impact of the Federal legislation presently enacted and that discussed for possible enactment cannot be ascertained with great accuracy; and (3) students enrolled in special education programs in Boards of Cooperative Educational Services facilities are not included here because separate enrollment projections were made for BOCES programs.

Public elementary special education enrollment ratios were estimated to increase on the average from about 1.99 percent in 1975 to about 2.40 percent in 1990 and nonpublic ratios from 2.20 percent in 1975 to about 2.70 percent in 1990. Special

education enrollments are projected to reach a peak in 1980 of 40,735 in public schools and 8,223 in nonpublic schools. In 1990, the projected enrollments for elementary special education programs in public schools is 38,661 and for nonpublic schools 7,731.

Trends in Secondary Special Education Enrollments

In 1965, public school enrollment in secondary special education programs was 20,725 or 1.56 percent of total secondary school enrollment (Grades 7-12). The figure in 1966 for nonpublic schools was 1286 or 0.38 percent. One decade later in 1975, secondary special education enrollment in public schools was 25,776 or 1.59 percent and in nonpublic schools was 3,201 or 1.21 percent. Tables 10.10 and 10.11 contain numerical data on public and nonpublic secondary school enrollments. Figure 10.21 shows actual and projected secondary school special education enrollments in public and nonpublic schools.

In projecting secondary special education enrollments for the years ahead to 1990, ratios for both public and nonpublic secondary special education enrollments were increased slightly. Public secondary special education enrollment ratios were projected to increase from 1.59 percent on the average to 2.46 percent for nonpublic from 1.21 percent on the average to 1.44 percent. Based on these projected ratios, public secondary school special education enrollments are projected to go from 25,766 in 1975 to 32,979 in 1980 to 29,215 in 1990. Nonpublic secondary school special education enrollments are projected to

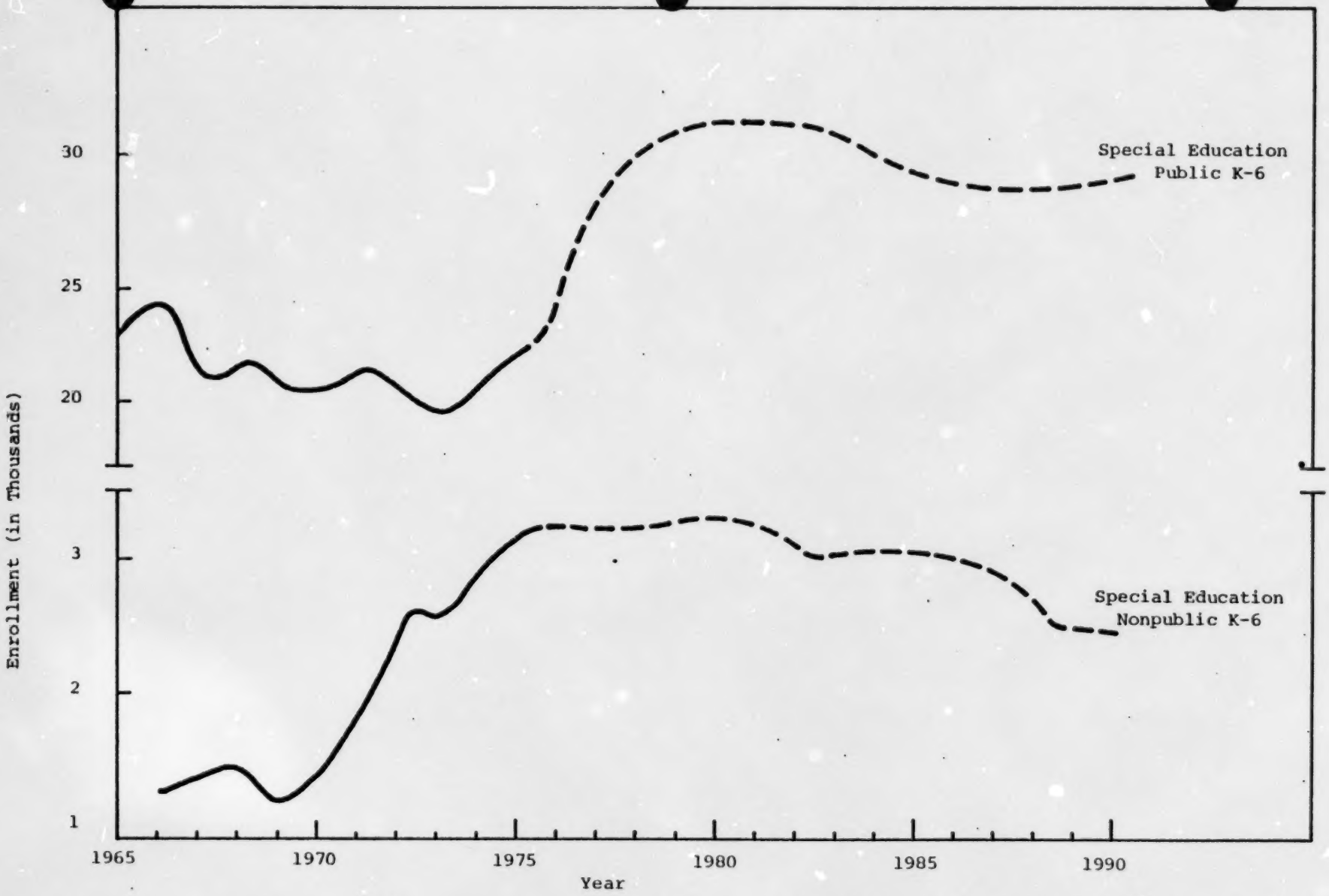

Figure 10.21. Actual Special Education Public and Nonpublic Pupil Enrollment for New York State from 1965 to 1975 and Public and Nonpublic Special Education Pupil Enrollment Projections for New York State from 1976 to 1990.

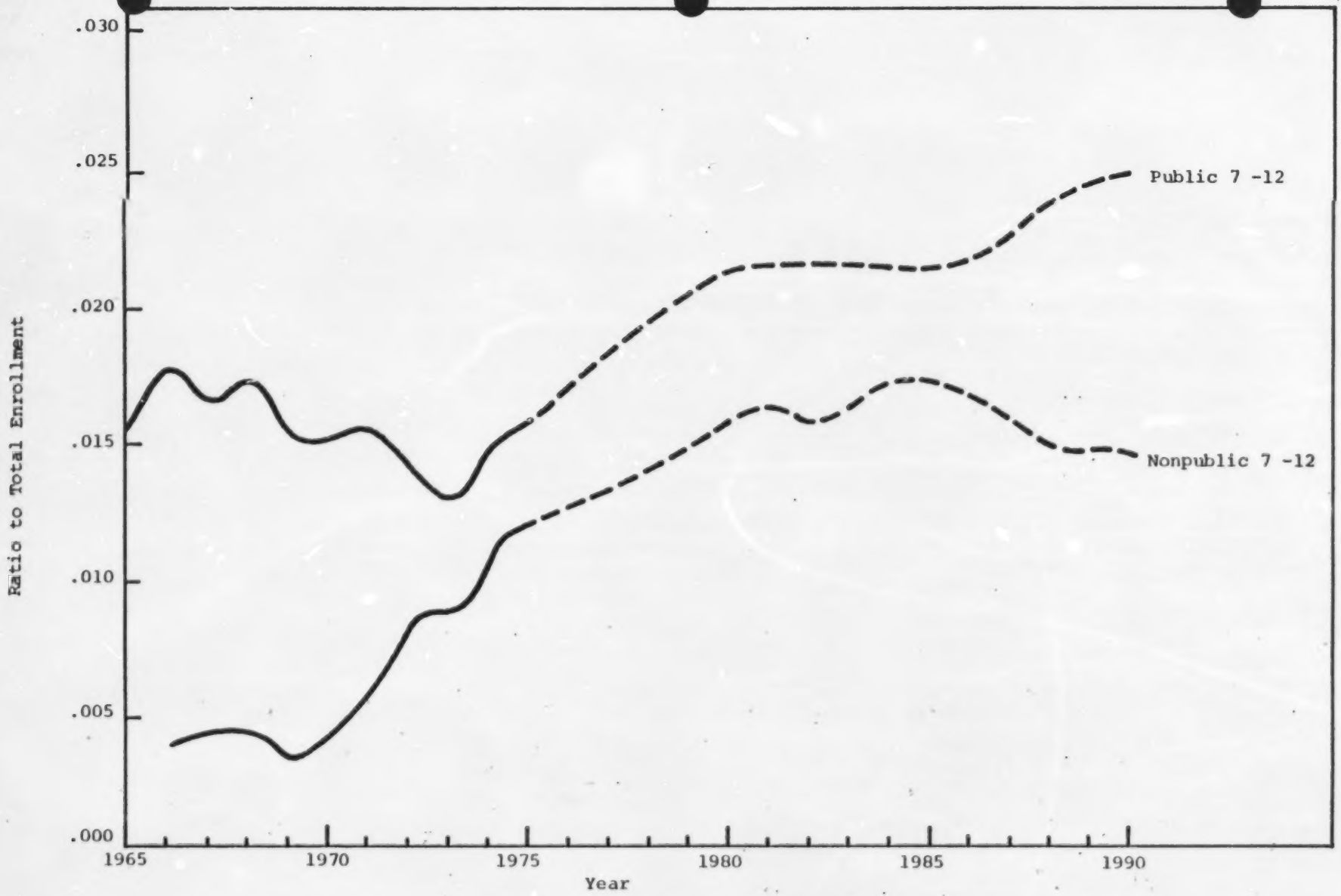

Figure 10.22. Actual and Projected Ratios of Public Secondary Special Education Pupils to Total Public Secondary Pupils Enrolled, and Nonpublic Secondary Special Education Pupils to Total Nonpublic Secondary Enrolled, 1965 to 1990.

go from 3,201 in 1975 to a high of 3,348 in 1980 trending downward to 2,506 in 1990.

TRENDS IN PUBLIC SCHOOL ENROLLMENTS BY REGION IN NEW YORK STATE

Table 10.12 contains actual and projected public pupil enrollments by region in New York State. The State is divided into thirteen different regions with the City of New York treated as a separate distinct region. In every region, the projected public enrollments are estimated to decrease. This is not to say, however, that in each and every school district in New York State public pupil enrollments will decrease. Rather, there will still be districts within each region which will gain pupils and in a few exceptional situations increase dramatically.

The regions that are projected to decrease the most by the year 1990 are: (1) Western Region, 22.7 percent; (2) Mohawk Valley Region, 20.5 percent; and (3) Southern Tier West Region, 19.0 percent. Those regions projected to decrease the least are (1) New York City, 11.6 percent; (2) Southern Tier Central Region, 11.8 percent; (3) Upper Hudson Region, 11.9 percent. When the data are expressed in actual numbers, however, those regions that will lose the most pupils are New York City, 127,486; Nassau-Suffolk Region, 107,956; Mid-Hudson Region, 59,234; and the Western Region, 59,170. Those regions that are projected to lose least are; Southern Tier Central Region, 7,784; Black River St. Lawrence Region, 7,998; and the George Champlain Region, 8,439. Of course, as might be expected, the

TABLE 10.12

TREND DATA ON PUBLIC SCHOOL ENROLLMENTS BY REGION IN NEW YORK STATE

SCHOOL YEAR (OCTOBER)	TOTAL PUBLIC SCHOOL ENROLLMENT (K-12)												
	NEW YORK CITY	NASSAU SUFFOLK	MID HUDSON	UPPER HUDSON	GEORGE CHAMPLAIN	BLACK RIVER ST. LAWRENCE	MOHAWK VALLEY	CENTRAL	SOUTHERN TIER EAST	SOUTHERN TIER WEST	SOUTHERN TIER CENTRAL	GENESEE FINGER LAKES	WESTERN
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1965													
1966													
1967													
1968													
1969													
1970	1,135,298	636,164	388,126	192,556	54,592	68,542	75,773	175,962	119,306	54,693	69,590	235,691	282,952
1971	1,140,349	639,573	393,731	195,347	55,519	68,771	74,993	176,273	118,483	53,917	69,472	234,986	282,445
1972	1,122,788	635,341	396,547	196,402	60,072	68,123	74,557	174,975	117,320	52,569	68,730	234,265	277,683
1973	1,099,280	629,135	396,106	195,186	55,079	67,121	73,174	173,719	116,194	51,599	67,495	232,257	271,215
1974	1,094,859	621,676	396,114	195,017	54,285	66,533	72,017	171,676	114,553	50,876	66,475	232,043	265,512
1975	1,096,460	613,358	394,671	194,089	53,887	66,457	70,730	171,024	113,538	50,195	65,780	231,126	261,054
1976	1,097,445	604,192	392,867	192,645	53,256	65,920	69,602	169,656	111,234	49,057	65,077	229,444	255,102
1977	1,087,375	591,064	386,464	190,747	52,323	65,116	67,580	166,498	108,209	47,631	63,967	224,777	247,361
1978	1,069,451	575,728	378,725	187,167	51,061	63,771	65,302	162,213	104,490	46,084	62,555	218,829	238,445
1979	1,047,706	561,489	370,030	182,671	49,653	62,124	62,888	157,858	100,745	44,573	61,126	212,667	229,405
1980	1,027,254	542,692	358,431	178,395	48,124	60,744	60,511	153,351	97,070	43,111	59,655	206,444	220,551
1981	1,002,587	526,435	349,090	174,378	46,737	59,344	58,448	149,272	93,893	41,797	58,256	201,158	213,311
1982	980,685	513,502	340,997	171,294	45,505	58,223	56,892	146,248	91,473	40,675	57,301	196,664	207,366
1983	966,933	504,934	335,501	169,237	44,810	57,475	55,856	144,155	89,963	39,997	56,678	193,742	202,986
1984	961,423	499,597	332,639	168,199	44,386	57,288	55,319	143,281	89,167	39,692	56,607	192,516	200,299
1985	957,102	496,904	331,073	167,753	44,264	57,383	55,092	142,675	88,590	39,592	56,595	191,239	198,985
1986*	953,257	494,908	329,743	167,079	44,086	57,152	54,871	142,102	88,234	39,432	56,368	190,471	198,186
1987*	948,826	492,608	328,210	166,303	43,881	56,887	54,616	141,441	87,824	39,249	56,106	189,586	197,265
1988*	946,382	491,338	327,365	165,874	43,768	56,740	54,475	141,077	87,593	39,149	55,961	189,097	196,756
1989*	954,566	493,588	330,196	167,309	44,146	57,231	54,946	142,297	88,355	39,487	56,445	170,732	198,458
1990	968,974	505,402	335,437	171,031	45,448	58,459	56,246	145,117	89,755	40,677	57,996	194,404	201,884

SOURCE: "New York State Projections of Public and NonPublic Enrollment 1976-77 to 1990-91 and Projections of Public and Nonpublic High School Graduates 1975-76 to 1985-86. The State Education Department, Information Center on Education, Albany, New York, 1976.

*SOURCE: Years 1986-1989 estimated by Section 842 staff.

TABLE 10.13

SCHOOL ENROLLMENT IN NEW YORK STATE FOR PUBLIC ELEMENTARY AND SECONDARY REGULAR DAY SCHOOLS

YEAR	UNGRADED	K - 6	7 - 12	TOTAL K - 12*
(1)	(2)	(3)	(4)	(5)
1965	48,152	1,796,357	1,332,065	3,128,422
1966	52,347	1,831,681	1,364,851	3,196,532
1967	51,843	1,865,266	1,408,368	3,273,634
1968	53,752	1,890,924	1,452,737	3,343,661
1969	51,965	1,904,040	1,486,804	3,390,844
1970	52,657	1,904,871	1,531,717	3,436,588
1971	50,328	1,884,466	1,569,075	3,453,541
1972	51,527	1,836,244	1,586,621	3,422,865
1973	46,846	1,781,360	1,599,354	3,380,714
1974	55,165	1,739,014	1,607,457	3,346,471
1975	59,728	1,703,370	1,619,271	3,322,641
1976	64,052	1,658,552	1,632,893	3,291,445
1977	67,314	1,599,656	1,632,142	3,231,798
1978	69,857	1,538,871	1,615,093	3,153,964
1979	72,006	1,487,104	1,583,825	3,070,929
1980	73,714	1,434,538	1,547,481	2,982,019
1981	71,156	1,387,158	1,516,392	2,903,550
1982	69,013	1,344,526	1,493,286	2,837,812
1983	67,606	1,336,524	1,458,137	2,794,661
1984	66,916	1,361,889	1,411,608	2,773,497
1985	66,500	1,402,793	1,357,954	2,760,747
1986	66,548	1,446,342	1,303,315	2,749,657
1987	66,238	1,497,128	1,239,749	2,736,877
1988	66,067	1,542,202	1,187,623	2,729,825
1989	66,639	1,582,277	1,171,157	2,753,434
1990	67,876	1,614,422	1,188,532	2,802,954

'Survey of Enrollment, Staff & School Housing" Fall Enrollment.

*Includes Post Graduate students. Does not include Ungraded figure.

TABLE 10.14

BOCES* ENROLLMENT TRENDS IN NEW YORK STATE--1970-90

SCHOOL YEAR	ACCUMULATED RESIDENT LIVE BIRTHS (7 YEAR TOTALS)	NYS TOTAL ENROLLMENT	BOCES ENROLLMENT
(1)	(2)	(3)	(4)
1970	2,478,684 (1959-1965)	3,489,245	17,058
1971	2,438,721 (1960-1966)	3,503,859	19,175
1972	2,387,546 (1961-1967)	3,474,392	20,413
1973	2,326,996 (1962-1968)	3,427,560	25,772
1974	2,282,955 (1963-1969)	3,401,636	23,237
1975	2,244,356 (1964-1970)	3,382,369	23,646
1976	2,177,185 (1965-1971)	3,355,497	24,112
1977	2,094,934 (1966-1972)	3,299,112	23,201
1978	2,012,902 (1967-1973)	3,223,821	22,293
1979	1,944,021 (1968-1974)	3,142,935	21,530
1980	1,878,127 (1969-1975)	3,055,733	20,800
1981	1,815,300 (1970-1976)	2,974,706	20,104
1982	1,758,082 (1971-1977)	2,906,825	19,471
1983	1,746,766 (1972-1978)	2,867,267	19,345
1984	1,779,310 (1973-1979)	2,840,413	19,706
1985	1,830,893 (1974-1980)	2,827,247	20,277
1986	1,887,414 (1975-1981)	2,816,205	20,903
1987	1,951,736 (1976-1982)	2,803,115	21,616
1988	2,010,631 (1977-1983)	2,795,892	22,268
1989	2,062,502 (1978-1984)	2,820,073	22,842
1990	2,102,599 (1979-1985)	2,870,830	23,286

*BOCES stands for - Board of Cooperative Educational Services.

regions that will lose most public school pupils are the very largest and those which will lose least are the very smallest regions in terms of pupil enrollments.

TRENDS IN TOTAL PUBLIC SCHOOL ENROLLMENT IN NEW YORK STATE

Table 10.13 contains actual and projected New York public school enrollment for grades K-6, 7-12, K-12, and ungraded handicapped for 1965 through 1975 and projected through 1990.

Grades K-6 enrollment increased between 1965 and 1970 by 6.04%, but decreased between 1970 and 1975 by 10.57%. Continued lower enrollment is anticipated through 1983, a dramatic 21.53% decline. However, a recovery should occur, and by 1990 the enrollment is projected to attain 1976 levels (a 17.21% increase between 1983 and 1990).

Grades 7-12 enrollment demonstrated a constant increase between 1965 and 1975 of some 21.56%. However, 1976 marks the watershed of secondary enrollments, and decline is projected until 1990. Between 1976 and 1989, secondary enrollment is expected to decline by 461,826 students, a 28.28% decline. Between 1989 and 1990, a modest 1.46% increase will occur.

Total state public enrollment increased between 1965 and 1971 by 10.39%. and then declined between 1971 and 1975 by 3.79%, with 130,000 fewer students. Total enrollments are projected to decline until 1988, from the 1975 total of 3,322,641 to 2,729,825, a 17.84% reduction. Between 1988 and 1990, a slow

recovery will occur as a result of elementary increases, resulting in an increase of 73,129, or a 2.67% increase. Overall, enrollments in 1990 will be 519,687 less than in 1975, a 15.64% decline from 1975.

Ungraded handicapped enrollments do not follow State trends. Between 1965 and 1975 ungraded student enrollments fluxated, but exhibited an increase of 11,576 between those years, a 24.04% change. Ungraded enrollments are expected to increase until 1980 by 13,986, a 23.41% increase over 1975. However, enrollments in handicapped after that year are projected to decline until 1989, when they will again begin to increase. By 1989, ungraded handicapped will have decreased by some 7,647 since 1980, roughly ten percent. The ungraded figures do not contain students mainstreamed into normal programs, nor do they contain students in full-time BOCES centers.

Pupils enrolled in BOCES full-time appear in Table 10.14. Between 1970 and 1975 BOCES enrollment increased by 6,588, or 38.62%. However, this actually represents a decline from the high year of 1973, which was a 51.08% increase from 1970. Assuming that BOCES handicapped should be a function of the number of live births occurring from six to thirteen years ago, it is projected that the number of BOCES children will peak in 1976, and bottom out in 1984 at 19,706, a 16.66% decline from 1975. It is then projected that enrollments will rise to 23,286, an increase of 3,580 or 18.16% by 1990.

Knowledgeable officials in the New York State Department of Education feel that two occurences may cause an elevation

of the 1981 figure to 25,890. The first would be an increase due to resettlement from institutions who choose to no longer support the numbers they now do, and the second would be an increase due to an incentive provided by federal categorical funds. As both are hypothetical, the Section 842 staff chose to stay with the figures displayed, and note the possibility of both occurrences altering the projections. However, it is important to note that if such events did take place, the students not received from institutions would have to be removed from total projections of public enrollment.

CHAPTER 5

SUGGESTIONS REGARDING FUTURE METHODOLOGY FOR PROJECTING PUPIL ENROLLMENTS IN NEW YORK STATE

Accurate projections of pupil enrollments are very important for planning purposes in public education. This is as true at the State or County levels as it is at the City or local school district levels. This is because one of the most important determiners of school expenditures is the number of pupils to be educated. This statistic has important ramifications for the numbers of teachers employed; buildings constructed, renovated, demolished, or diverted to uses other than instruction; salaries paid certificated and non-certificated personnel, and quality and quantity of instructional materials and equipment, all of which weigh heavily on school expenditures. Consequently, accurate projections of pupil enrollments coupled with proper educational planning can result in more efficient school operations in areas such as staff training, staff recruitment, location of new school buildings in the event of increased pupil enrollments or abandonment of school buildings in the event of decreased pupil enrollments.

REVIEW OF METHODOLOGY

As indicated in the Grether study[1] "no known formula

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[1] Clara E. Grether, "Factors in the Growth Variations in Public Elementary School Membership in Urban Census Tracts, "Doctoral Dissertation, John Hopkins University, Baltimore, Maryland, 1967.

exists which combines a variety of measures into an effective predictor of public school membership....." Grether was referring to school districts and to the methodology of multiple correlation regression analysis in projecting pupil populations. Almost one decade later, the same statement can be applied to pupil enrollment projections at the regional or state levels. At the time Grether did her study, there was the feeling among some experts in pupil enrollment projections that factors such as population age, race, sex, density, enrollment density change, pupil mobility, housing, economic and/or social status, school policies on promotion and retardation, and percent of nonpublic pupil enrollments when properly combined in a multiple order correlation regression formula would result in very accurate school enrollment projections. Extensive testing with current data demonstrated that the improvement simply did not materialize. Rather, of all the procedures utilized, the modified grade retention cohort method still proves as accurate as more sophisticated statistical methods and usually at less expense. Consequently, no recommendations are made herein to change this procedure for pupil enrollment projections.

There is a need, however, for the accumulation of pupil data over long periods of time. There is also the need for gathering more accurate pupil statistics, particularly in the nonpublic sector as well as the need for gathering pupil statistics on a programmatic rather than just on a grade or ungraded basis.

Lastly, logistic growth curves of the asymptotic type

fitted by the least squares technique could prove helpful, not as a replacement for the modified grade retention cohort method, but as a check on the reasonableness of the pupil enrollments projected. Such equations take the form

$$Y' = \frac{\text{Constant K}}{1 + e^{-(a + bt)}}$$

where the constant K represents a pre-selected value so that an extended projection does not yield unrealistic results.

APPENDIX

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